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THE JOURNAL

OF THE

American Medical Association

Annual Subscription, $5.00 | PUBLISHED WEEKLY | Single Copies, 20 Cents

VOLUME 89, No. 17 | 535 North Dearborn Street, CHICAGO, ILL. | OCTOBER 22, 1927

CONTENTS AND SUBJECT INDEX

Hematology of Subacute Streptococcus Viridans Endocarditis. O. H. Perry Pepper, M.D., Philadelphia.....1377

Cardiac Disturbances in Goiter. John Phillips, M.B., and J. P. Anderson, M.D., Cleveland.....1380

The Diagnosis and Treatment of Bronchiectasis. Carl A. Hedblom, M.D., Chicago 1384
Discussed by Drs. Lilienthal and Hedblom.

Acute Circumscribed Edema (Quincke). H. H. Drysdale, M.D., Cleveland..1390
Discussed by Drs. Bassoe, Stone, Hall, Schachter and Drysdale.

Hemolytic Streptococcus Carriers: Their Relation to the Spread of Scarlet Fever. Mary B. Kirkbride and Mary W. Wheeler, M.A., Albany, N. Y..1394

Friedreich's Ataxia in Ten Members of a Family. Glenville Giddings, M.D., Atlanta, Ga. 1395
Discussed by Drs. Skoog and Giddings.

Treatment of Gastric Hemorrhage. A. F. R. Andresen, M.D., Brooklyn..1397
Discussed by Drs. Verbrycke, Balfour, Smithies and Andresen.

Management of Cancer of the Breast. Arthur W. Erskine, M.D., Cedar Rapids, Iowa.....1402
Discussed by Dr. Orndoff.

Sugar Tolerance as an Aid to Diagnosis. Allan Winter Rowe, Ph.D., Boston.1403
Discussed by Drs. Lawrence, John, Hoskins and Rowe.

Relation of Industrial Medical Department to a Community Health Program. William Alfred Sawyer, M.D., Rochester, N. Y. 1408
Discussed by Drs. Noland, Corbett, Rector, Wood, Cheney, Welch, Lawrence and Sawyer.

The Diagnosis of Tuberculosis in the Child's Chest. Kennon Dunham, M.D., Cincinnati 1413

Tuberculosis in Childhood: Prognosis, Prophylaxis and Treatment. John C. Gittings, M.D.; Frederick W. Lathrop, M.D., and Samuel A. Anderson, M.D., Philadelphia 1415
Papers of Drs. Opie, Hempelmann, Burhans, Dunham, and Gittings, Lathrop and Anderson discussed by Drs. Smith, Foote, Greenwald, Hess, Opie, Hempelmann, Burhans, Dunham and Gittings.

Gelatin Added to the Diets of Artificially Fed Infants. Julius H. Hess, M.D., and I. McKy Chamberlain, M.D., Chicago 1423

CLINICAL NOTES, SUGGESTIONS AND NEW INSTRUMENTS

Treatment of Fibrous Ankylosis of Knee and Elbow Joints. S. D. Calonge, M.D., Salt Lake City.....1427

EDITORIALS

The Pasteurization of Milk.....1428

Mikulicz's Disease.....1429

Thrush 1429

CURRENT COMMENT

Fiftieth Anniversary of the Massachusetts Medico-Legal Society.....1430

Do Ohio Voters Need an Intelligence Test? 1431

(Subject Index on next page)

Entered as Second-Class Matter, June 25, 1885, at the Postoffice at Chicago, Ill., under Act of March 3, 1879. Acceptance for mailing at special rate of postage provided for in Section 1103, Act of October 3, 1917, authorized on June 14, 1918. If undeliverable, return postage is guaranteed

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Other SAUNDERS BOOKS on Page 3

SUBJECT INDEX TO THIS ISSUE

The letters used to explain in which department the matter indexed appears are as follows: The Star (*) indicates an Original Article; "ab," abstract; "E," Editorial; "C," Correspondence; "Ml," Medicolegal; "ME," Medical Economics.

Abortion, lipoid retention after.....ab-1466
Abscesses, lumbar, of colic origin.....ab-1463
Acid, boric, solution, antiseptic value questioned E-1429
Acid-base equilibrium change.....ab-1464
Alcohol, diuretic action.....ab-1463
germicidal value ab-1460
Anemia, pernicious, and tropical sprue..ab-1455
Anesthesia, nitrous oxide under pressure.ab-1458
mortality increase 1438
Anthropologic Institute 1440
Aspergillosis, pulmonary ab-1463
Ataxia, Friedreich's, familial.....*1395
Auricular fibrillation in hypothyroidism..*1380
Aviators, quarantine applied to.....1441
Baking powder and kidneys.....C-1445
Bengal water nut, food value.....ab-1460
Bibliothèque Nationale, catalogue.....1440
Blood acidity vs. volume flow.....ab-1454
bilirubin ab-1455
cholesterol vs. radiation.....ab-1457
circulation vs. carbon dioxide.....ab-1454
circulation vs. dextrose intravenously.ab-1465
circulation vs. respiration.....ab-1461
formation vs. bacteria and toxins.....ab-1466
groups in hemophilic family.....ab-1465
groups vs. Thiersch skin graft.....ab-1462
hypotension of foreigners in China...ab-1454
injected in gastric hemorrhage.....*1397
insulin hypoglycemia vs. cobalt.....ab-1453
matching, rapid method.....ab-1462
phosphate, inorganic ab-1453
sugar curves vs. dextrose.....ab-1455
sugar curves vs. sugar tolerance test..*1403
vessels, salts effect on.....ab-1463
Bone destruction in Hodgkin's disease..ab-1467
marrow tuberculosis ab-1457
Book Notices.....1448
Books Received.....1450
Brain abscess, otogenic ab-1468
Bread, staleness of.....1445
Breast cancer, treatment.....*1402, ab-1467
abscesses, after mastitis typhosa.....ab-1466
tumor ab-1466
Brill's Disease ab-1462
Bronchiectasis, diagnosis and treatment..*1384
Calcium carbonate in gastric ulcer.....C-1445
Calumet Baking Powder.....C-1445
Cancer cells, culture in vitro.....ab-1468
contagion, heredity and chance in....ab-1462
heredity ab-1457
roentgen-ray, gynecologic ab-1464
treatment, lead 1438
Capillary caliber variations ab-1462
Carotid Body tumors.....ab-1459
Cataract, Succus Cineraria for.....1446
Chalicosis ab-1467
Chaulmoogra compounds, new ab-1458
Chiropractors in Ohio.....E-1431
Cholera vibrio, specific substance.....ab-1457
Cholesteatoma in antrum of Highmore..ab-1468
Chondrodystrophia fetalis ab-1466
Correspondence.....1445
Deaths.....1443
Diabetes Mellitus, gangrene in, treatment.ab-1461
nephrosis in ab-1463
Diagnosis, sugar tolerance aid to.....*1403
Diaphragm vs. caval circulation.....ab-1464
Diarrhea, combined serotherapy for.....1439
Digitalis preparations compared.....ab-1458
Diuretic action of alcohol.....ab-1463
Dropsy, epidemic, etiology.....ab-1460
Drugs, biologic control, France.....1439
Dysentery, bacteriophage therapy.....ab-1460
Dystrophy of skin and muscles.....ab-1468
Echinococcosis ab-1459
Eclampsia vs. weather ab-1466
Edema, acute circumscribed.....*1390
anasarca of alimentary origin.....ab-1463
Elbow, fibrous ankylosis.....*1427
Empyema, treatment in children.....ab-1461
Encephalitis, Epidemic, papilledema in..ab-1453
treatment ab-1465
Endocarditis, gonococcal ab-1461
subacute viridans, hematology of.....*1377
Evidence, demonstrative, exhibit of person to jury Ml-1452
roentgenograms, best evidence rule...Ml-1452
Fallopian Tubes visualized by iodized oil.ab-1459
Fetus, cerebellar hypotonia in.....ab-1466
Film, *The Future Mother*.....1439
Fistula, biliary ab-1464
Foreign Letters.....1437
Frambesia and Madelung's deformity...ab-1462
Furunculosis, diathermy for.....ab-1460
Galvanic current vs. hyperemia and wound healing ab-1464
waves, long period alternating.....ab-1462
Gelatin added to infant's food.....*1423
Gentian Violet in thrush.....E-1429
Glycosuria, phlorhizin, and synthalin....ab-1467
test with 70 Gm. of glucose.....ab-1461
Goiter, cardiac disturbances in.....*1380
iodine content in new-born.....ab-1463
Government Services.....1437
Gruber, Professor, death.....1440
Headache, pathology and therapy.....ab-1465
Health program, community vs. industrial medical department *1408
public, vs. social insurance.....1441
Heart cancer, secondary ab-1456
disease, exercise vs. metabolism in...ab-1455
disorders in goiter *1380
rupture after trip on mountain railway.ab-1465
Hemoglobin, spectrophotometric estimation ab-1455
Hemophilia, blood groups in.....ab-1465
Hemorrhage, toxicity of drugs after....ab-1458
Heredity of Friedreich's ataxia.....*1395
Hiccups among infants.....ab-1453
Hospital, University Woman's Hospital....1440
Hyperemia vs. galvanic current.....ab-1464
Hyperthyroidism, auricular fibrillation in..*1380
Industrial medical department vs. community health *1408
Infants, diet, gelatin added to.....*1423
new-born, goiter iodine content.....ab-1463
new-born, intracranial hemorrhage in.ab-1459
Insanity in 1926, England.....1438
contractual capacity and zoophilism...Ml-1452
Insulin, toxic effects.....ab-1455
Insulinoid in malignant tumors.....ab-1457
Insurance, social, and public health.....1441
life, sickness between examination and delivery of policy.....Ml-1451
Intestines, parasites in East Africa.....ab-1460
ileus, blood-lymph circulation in.....ab-1464
liquid petrolatum action on.....ab-1463
Intussusception, incidence ab-1453
Iodized Oil in diagnosis of bronchiectasis.*1384
in uterosalpingography ab-1459
Jaundice, calcium in, vs. parathyroid extract ab-1454
Kidney disease in diabetes.....ab-1463
baking powder and.....C-1445
excretion vs. Ambard's laws.....ab-1454
lymphoblastoma ab-1461
Knee fibrous ankylosis.....*1427
Lactation in woman never pregnant....ab-1460
Leishmaniasis, stiburea test for.....ab-1460
Leptomeningitis after ethmoid cell operation ab-1460
Leukocytes in surgical infections.....ab-1465
Leukopenia vs. tonsil extract.....ab-1468
Licensure, quarter system in.....1447
Liver, arterial blood supply.....ab-1467
function in cirrhosis.....ab-1455
London, town planning.....1438
Lymph Nodes, tuberculosis.....*1413, *1415
Lymphogranulomatosis, ivory vertebra in.ab-1467
bone destruction in ab-1467
Marriages.....1442
Massachusetts Medico-Legal Society.....E-1430
Maxillary Sinus, cholesteatoma.....ab-1468
Measles, enlarged spleen in.....ab-1453
Medical Education in Austria.....ab-1456
curriculum, proposed new.....ab-1456
in Sweden ab-1455
preceptor system ab-1455
quarter system vs. licensure.....1447
Medical Education, Registration.....1447
Medical Examiner system.....C-1445
Medical Forensic Councils.....1442
Medical Practice Acts, "medical college of four years' requirements" defined..Ml-1451
Medicolegal.....1451
Meetings, Coming Meetings.....1452
Mesentery, torsion ab-1456
Mesurol 1427
Metabolism, Basal, vs. ultraviolet rays.ab-1453
exercise in heart disease vs.....ab-1455
Midwives' association, Japan.....1441
Mikulicz's Disease E-1429
Milk, pasteurization E-1428
tuberculous milk scandal.....1441
Mitral Valve stenosis, silent.....ab-1463
Mushrooms examination, public service for.1440
Narcotics legislation and physicians.....1439
Nephritis, chronic, vs. scarlet fever....ab-1456
plasma chlorides in ab-1453
New and Nonofficial Remedies.....1427
News.....1431
Nose hemorrhage ab-1468
hemorrhage, roentgen rays in.....ab-1466
Ohio voters need an intelligence test?...E-1431
Oidium albicans E-1429
Otitis Media, chronic suppurative.....ab-1460
Paralysis, General, spinal fluid in.....ab-1461
malarial and tryparsamide treatment...ab-1458
Penzoldt, Professor, death.....1440
Peptic Ulcer, calcium carbonate used in, in 1829 .....C-1445
Pericarditis, adhesive ab-1464
Physical Examination, periodic, of medical students ab-1456
free; migration to Canada.....1437
Physicians, practicing, vs. industrial medical department *1408
first women to receive doctorates, Japan..1441
negro, vs. white nurses.....1437
oversupply, Great Britain.....1438
restrict roentgenography to.....1440
Pneumococcus growth inhibition.....ab-1457
immunologic substances in.....ab-1457
Poliomyelitis in central Europe.....1442
Population, one million increase, Japan....1441
Pregnancy, blood amino-acids in.....ab-1465
cerebellar hypotonia in child after fall of mother during ab-1466
Priapism, ethyl chloride treatment.....1446
Propaganda for Reform.....1444
Puerperium, blood sedimentation test in..ab-1462
Purging nut tree, poisoning by.....ab-1461
Pylorus, stenosis of infants.....ab-1453
Queries and Minor Notes.....1445
Respiration, correlation with circulation.ab-1461
Ringworm, in Southern State.....ab-1459
Roentgen-Rays ulcers, diathermy in....ab-1467
Sacro-Iliac joint, extra-articular fusion.ab-1459
Scarlet Fever, etiology ab-1456
chronic nephritis relation to.....ab-1456
spread vs. hemolytic streptococcus carriers *1394
toxins ab-1457
Silicosis in granite workers.....ab-1458
Sinus disease in Gulf Coast children....ab-1459
Skin diseases, protein therapy in.....ab-1467
diseases, leukoderma and melanoderma in ab-1467
Society Proceedings.....1435, 1452
Splenomegaly, mycotic (sidero-).....ab-1463
State Board Examination.....1447
Sterility in women, endocrine causes...ab-1459
Stomach hemorrhage, treatment *1397
lymphoblastoma ab-1461
resection, technic ab-1459
Stomatitis, protracted postinfluenzal....ab-1463
thrush E-1429
Streptococcus, hemolytic, carriers vs. scarlet fever *1394
Succus Cineraria for cataract.....1446
Sugar tolerance aid to diagnosis.....*1403
Surgery, preparation of patients for....ab-1461
Synthalin and phlorhizin diabetes.....ab-1467
Syphilis, experimental ab-1457
incidence in China ab-1462
Tetany, ammonium chloride prevents....ab-1454
Thrombopenia, splenectomy in.....ab-1464
Thrombosis, coronary, infective.....ab-1456
Thyroid, hormone output, increasing....ab-1454
Tissues, water storage by.....ab-1454
acidity vs. volume flow of blood.....ab-1454
Tobacco, antitobacco league.....1442
Tonics and Sedatives.....Adv. page 22
Tonsils, function ab-1468
Tuberculosis, children threatened with...ab-1468
bovine, milk and meat scandal, Tokyo...1441
diagnosis in child's chest.....*1413
in Czechoslovakian army.....1442
in granite workers.....ab-1458
mortality in various races.....*1415
pulmonary, hemoptysis in opiates.....1446
pulmonary in children.....*1415
surgical, diet in ab-1466
treatment, "sanocrysin" ab-1468
Tumor, malignant, insulinoid in.....ab-1457
malignant, transmission, failure of...ab-1457
massage and metastases.....ab-1457
Ureter, palpation in women.....ab-1467
Urine, incontinence, spontaneous birth after musculoplasty for ab-1467
Uterus adnexitis, etiology ab-1465
visualized with iodized oil.....ab-1459
Vena Cava, inferior, stasis in.....ab-1464
inferior, circulation vs. diaphragm..ab-1464
Vital Statistics, Czechoslovak Republic....1442
Vitamin in wheat germ oil.....1446
solvent, liquid petrolatum as.....1446
Whooping Cough, convalescent serum in..ab-1456
diagnostic methods in.....1446
Wound healing vs. galvanic current....ab-1464

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The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 89, NO. 17 CHICAGO, ILLINOIS OCTOBER 22, 1927

THE HEMATOLOGY OF SUBACUTE STREPTOCOCCUS VIRIDANS ENDOCARDITIS *

O. H. PERRY PEPPER, M.D.

PHILADELPHIA

The clinical picture of subacute bacterial endocarditis has become familiar, but help is still needed in distinguishing the subacute from the acute forms, and the diagnosis of the bacterial type is still dependent on blood culture. To these ends it would seem that the interesting blood changes which occur in this disease should be of help; unfortunately, there are but few satisfactory data available.

In the older literature, including the standard works on hematology,[1] no distinctions between the various bacterial types of endocarditis were drawn. After subacute bacterial endocarditis became firmly established as a clinical entity, many references to the blood were made but no grouping according to the bacteriology. The figures given by Simon [2] and by Gulland and Goodall [3] are of this type, while the two leading continental hematologists, Jolly [4] and Naegeli,[5] scarcely mention the matter in their most recent editions.

In the current literature of the last few years there have been many case reports, but amazingly few with the organism identified and a blood count recorded. Even in Blumer's [6] authoritative monograph on subacute bacterial endocarditis, only ninety-four blood counts collected from all sources are quoted. Unfortunately, the analysis of the 264 case records from which these counts were drawn does not permit any correlation of the blood picture with the clinical course or with the bacteriology, which includes the pneumococcus, staphylococcus, hemolytic streptococcus and many others. In Thayer's [7] analysis of the Johns Hopkins Hospital material, the various bacterial types of endocarditis are each considered individually and blood counts quoted for each. Unfortunately, the counts cannot be correlated with the stage or the progress of the disease or with the occurrence of complications. These figures are by far the best available, although Thayer states that in a good many instances only one blood count was made.

It has therefore seemed worth while to analyze the records of a small group of carefully studied patients with subacute bacterial endocarditis in which both the bacteriology and the hematology were known. For this purpose, twenty patients with subacute bacterial endocarditis due to identified nonhemolytic streptococci were selected from the records of the Medical Division of the Hospital of the University of Pennsylvania. No patient was accepted whose condition did not conform clinically with the usual picture of subacute bacterial endocarditis, who was not proved by blood culture to have nonhemolytic streptococci in the blood, or who did not have several complete blood counts.

For comparison, the records of those with hemolytic streptococci who met the same requirements were analyzed.

ANEMIA

Table 1 shows the frequency of anemia and the lowest figures recorded. It will be seen that all but one of the University Hospital series of patients were anemic. In only three fourths of the cases collected from the literature did the recorded count show anemia. This is probably explainable by the fact that in many of the latter the only blood count was made at the time of the first examination, perhaps before anemia had developed. Many of the University Hospital patients had little or no anemia on admission; all but one later became anemic. Thayer does not state how many in his series exhibited anemia, but it "was always a striking feature in cases of long duration." It has often been said that the degree of anemia corresponds with the progress of the disease. In the present series it seems to be proportionate to the imminence of a fatal outcome rather than to the length of time the patient has been ill. Often the degree of anemia remains stationary for weeks or months, but twelve of our thirteen patients in whom blood counts were taken shortly before death died with a hemoglobin below 50 per cent and a red cell count below 3,000,000. The one exception died suddenly following the administration of antistreptococcus serum. On the other hand, the one patient in the series who apparently made a complete recovery had

TABLE 1.—*Anemia in Streptococcus Viridans Subacute Bacterial Endocarditis*

Bacterium	Number of Cases	Percentage of Cases Anemic	Lowest Hemoglobin, per Cent	Lowest Red Blood Count
Streptococcus viridans	20	95	25	2,220,000
Hemolytic streptococci	5	100	28	1,970,000

* Read before the Section on Practice of Medicine at the Seventy-Eighth Annual Session of the American Medical Association, Washington, D. C., May 20, 1927.

1. Cabot, R. C.: Clinical Examination of the Blood, ed. 5, New York, William Wood and Company, 1904, p. 347. DaCosta, J. C.: Clinical Hematology, ed. 2, Philadelphia, P. Blakiston's Son and Company, 1905, p. 482. Ewing, J.: Clinical Pathology of the Blood, ed. 2, Philadelphia, Lea & Febiger, 1909, p. 412. Ward, G. R.: Bedside Hematology, Philadelphia, W. B. Saunders Company, 1914, p. 373.
2. Simon, C. E.: Clinical Diagnosis, ed. 10, Philadelphia, Lea & Febiger, 1922, p. 913.
3. Gulland, G. L., and Goodall, A.: The Blood, ed. 3, Edinburgh, W. Green and Son, 1925.
4. Jolly, J.: Traité technique d'hematologie, Paris, 1923.
5. Naegeli, O.: Blutkrankheiten and Blutdiagnostik, ed. 4, Berlin, Johns Springer, 1923.
6. Blumer, G.: Medicine **2**: 105 (May) 1923.
7. Thayer, W. S.: Johns Hopkins Hosp. Reports, part 1, **22**, 1926.

at one time a hemoglobin of 52 per cent and a red cell count of 3,350,000. Each of the lowest counts shown in table 1 was obtained within two weeks of the patient's death.

There is no significant difference in the frequency of anemia or in the minimal figures obtained between the series due to *Streptococcus viridans* and those due to the hemolytic streptococcus. A much larger series from the literature would have been available if it had been possible to include the figures of Clawson and Bell [8] and of Calugareanu,[9] but unfortunately the streptococcic nature of the cases in which the blood counts are quoted by these authors is left in doubt.

Average counts are not given in table 1 as such averages are almost meaningless, as table 2 illustrates. An average derived from each patient's lowest count and another from the highest count is somewhat better, but only if each patient has more than one count and at comparable periods of the disease.

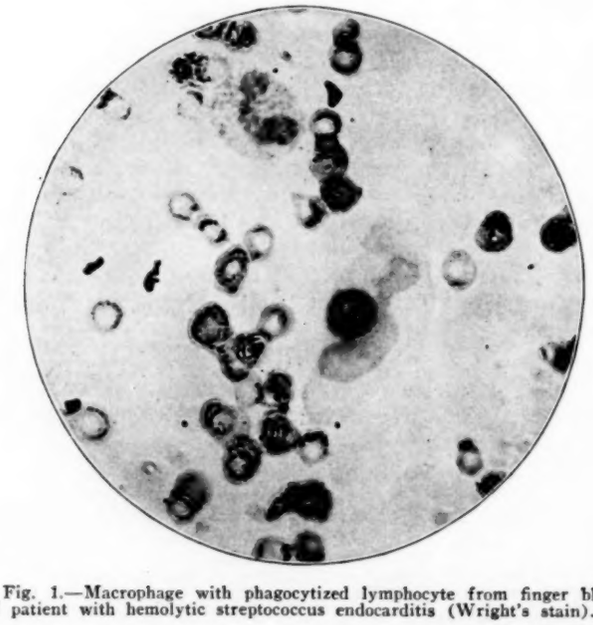

Fig. 1.—Macrophage with phagocytized lymphocyte from finger blood of patient with hemolytic streptococcus endocarditis (Wright's stain).

The anemia in the present series was uniformly of the chloro-anemic or secondary variety. No patient consistently had a color index of 1 or over, and in only three of the total 124 counts with hemoglobin and red cell figures did the color index actually exceed 1. This is in accord with Thayer, but Horder [10] states that the

TABLE 2.—*Subacute Bacterial Endocarditis (Case 19, Streptococcus viridans)*

	Hemoglobin, per Cent	Red Blood Corpuscles per Cubic Millimeter
	63	3,200,000
30 days later	28	1,980,000
Transfusion, 500 cc.		
5 days later	30	2,540,000
3 days later died; autopsy		

color index is high in the anemia of subacute endocarditis, and Libman [11] states that the color index rises above 1 when nitrogen retention occurs. The figures in this series do not support these views nor do they offer any justification for the emphasis that has been laid by many writers on the simulation of primary pernicious or addisonian anemia by the anemia of subacute endocarditis. All writers refer back to a report by Achard and Foix [12] of two cases, one due to a gram-negative, the other to a gram-positive streptococcus. In each the anemia was severe; in one instance the color index was above 1; in the other it was below. But in each the white cell count was above 25,000 with more than 85 per cent of neutrophilic leukocytes, which should have been sufficient to dismiss any thought of addisonian anemia.

Subacute bacterial endocarditis with severe anemia and a low white cell count, far more suggestive of addisonian anemia, does, however, occur; as, for example, in the case reported by Courtois-Suffit, Schaeffer and Garcin [13] in which the hemoglobin was 30 per cent; the red blood count 870,000; the color index almost 2; the white blood count 4,500, and polymorphonuclears 53.5 per cent.

LEUKOCYTOSIS AND LEUKOPENIA

Very little effort has apparently been made to explain the variability of the white cell count in subacute bacterial endocarditis. Horder states that leukopenia is quite common and leukocytosis not a feature; Willius [14] that "leukocytosis never occurs unless the disease is complicated by sepsis." Behrens,[15] on the other hand,

TABLE 3.—*Correlation of Leukocytosis in Subacute Viridans Endocarditis with Incidents in Clinical Course*

Clinical Incident	Number of Cases	Counts with Leukocytosis	Highest Count
Gross infarction	6	10	20,400
Posttransfusion	5	6	25,600
Phlebitis	1	4	20,000
Severe cardiac failure	1	2	14,100
Serum reaction ?	2	2	19,900
Pneumonia	1	1	15,200
Unexplained	2	8	21,300

found a normal count in only one of his seventeen cases. The figures given in the reports of Thayer, of Blumer, of Clawson and Bell, and of Calugareanu all reveal marked variability in the level of the count, but in none can the ups and down be correlated with the clinical course. Nor do averages as quoted by Cotton [16] and by Horder reveal the true state of affairs.

Whenever repeated counts are made it is evident that there is usually no constant tendency for the occurrence of leukocytosis in subacute bacterial endocarditis due to *Streptococcus viridans*. Of 103 white cell counts made in the twenty cases of the present series, forty-six were below 9,000, and this agrees in general with the figures of Blumer and of Thayer. What this series shows and what to my mind is far more important is that only five of the twenty failed at some time to have a count below 9,000. Similarly, only five failed to have at least one count above 14,000. When one correlates the white cell counts with the incidents of the clinical course, the higher counts often seem to be explainable. Of the 103 counts, thirty-three were above 14,000 and occurred in fifteen of the twenty patients. The possible explanations of these are detailed in table 3.

These figures are certainly suggestive. For only eight counts was a reasonable explanation not found; seven

8. Clawson, B. J., and Bell, E. T.: A Comparison of Acute Rheumatic and Subacute Bacterial Endocarditis, Arch. Int. Med. **37**: 66 (Jan.) 1296.
9. Calugareanu, A.: Ann. de méd. **17**: 633 (June) 1925.
10. Horder, T.: Brit. M. J. **1**: 641 (April 10) 1926.
11. Libman, E.: Bull. Acad. de méd. **92**: 998 (Oct. 7) 1924.
12. Achard, C., and Foix, C.: Arch. d. mal. du cœur. **7**: 289, 1914.
13. Courtois-Suffit, Schaeffer and Garcin: Arch. d. mal. du cœur, **17**: 418 (July) 1924.
14. Willius, F. A.: Southwestern Med. **8**: 203 (May) 1924.
15. Behrens, L. H.: Ann. Clin. Med. **3**: 188 (Sept.) 1924.
16. Cotton, T. F.: Brit. M. J. **2**: 851 (Dec. 4) 1920.

of these were in one case. It is often impossible to recognize the occurrence of infarction and, judging from the other cases, it is quite likely that in these unexplained instances some unrecognized complication was present. Similarly, the frequent rises of the white cell count to about 12,000 may have a relationship to minor embolic phenomena, but no correlation can be determined between such counts and the appearance of petechiae or hematuria. It seems, therefore, that true

Fig. 2.—Group of various mononucleated cells from ear blood of patient with Streptococcus anginosus endocarditis. Three correspond to the so-called intermediate form; one exhibits vacuoles, and one contains a phagocytized particle of deeply staining material (Wright's stain).

luekocytosis seldom, if ever, occurs in subacute viridans endocarditis except following infarction, embolism or other complication.

Nor, on the other hand, is true leukopenia common. Only five counts of the total 103 were below 6,000; the lowest was 4,800. These five counts occurred once in each of five patients. A more marked leukopenia, 2,600, occurred twice with hemolytic streptococci.

Table 4 shows how misleading average figures for the white cell count may be.

TABLE 4.—*Subacute Viridans Endocarditis: Case 33*

Days Interval	White Blood Count per Cubic Millimeter	Polymorphonuclears, per Cent	Lymphocytes, per Cent	Mononuclears, per Cent	Notes
..	5,600	74	19	7	
12	11,000	73	21	6	Cerebral embolism
2	9,000	..	..	..	
1	10,000	..	..	..	
11	20,000	74	24	2	Probable infarction
26	14,600	65	32	3	
8	Died; autopsy: endocarditis, mycotic aneurysm, many infarcts				

THE DIFFERENTIAL COUNT

One outstanding feature of the differential counts is the variability in the percentage of neutrophils and the lack of relationship between the percentage of these cells and the total white count. Often the two move in opposite directions. For example, in case 20, when the total count was 9,200, 68 per cent of neutrophils were present, and three weeks later when the white count was 18,200, there were only 60 per cent of neutrophils. In other instances the neutrophil percentage rose as usual with the total count. This was especially true in the higher counts, and this agrees with the records in Thayer's series. There was no apparent difference between the viridans cases and those due to the hemolytic streptococci. None exhibited the progressive decline in total count with progressive increase in neutrophils which Blumer refers to as occasionally taking place, nor did any simulate "splenic anemia." A review of the figures of the cases reported in the literature which are supposed to have simulated "splenic anemia" shows extreme variability and but little justification for the claimed resemblance. Libman emphasizes the occurrence of leukopenia with lymphocytosis, especially when there is splenomegaly. In the present series, it was impossible to correlate leukopenia or normal white cell figures with the presence of splenic enlargement. Such lymphocytosis as was present was almost always relative to a diminished number of neutrophils.

An occasional myelocyte was not uncommonly noted, but this is now known to be a frequent occurrence under a great variety of conditions. Unusual change in the number of eosinophils was not noted.

ENDOTHELIOSIS

The other change in the white cell picture that deserves mention is the occasional increase in the large mononuclear cells of the blood—those cells sometimes called endothelial leukocytes, sometimes monocytes or mononuclears. In the last fifteen years, a considerable literature has grown up concerning the occurrence of a marked increase in these cells in subacute bacterial endocarditis. Sometimes they occur in all specimens of blood taken, sometimes erratically in one and not in another. This has led to the assertion that their number can be increased by massage of the part from which the blood is taken, and this again to the view that they represent cells from the endothelial lining of the capil-

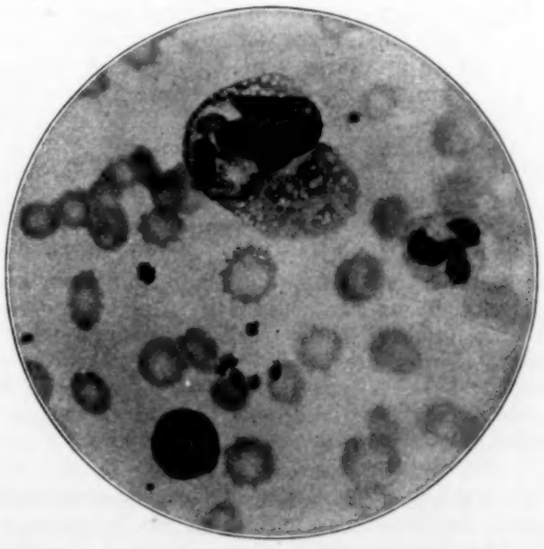

Fig. 3.—Macrophage with phagocytized neutrophilic leukocyte from the ear blood of a patient with subacute viridans endocarditis. Cytoplasm contains many vacuoles. Nucleus is indented by the phagocytized leukocyte. The large size of the macrophage is evident from comparison with the nearby neutrophilic leukocyte (Wright's stain).

laries. Some observers have found a far greater number in blood from the ear than from the finger. Sometimes the cell type is that normally seen in small numbers in the blood; in other instances the predominant forms are much larger, many with vacuoles and some exhibiting phagocytic activity. These large cells have usually been called endothelial phagocytes or macrophages. All gradations can be found between these macrophages and the normal monocytes of the

blood. Increased numbers of these cells are said to be present at some time or other in almost every instance of subacute bacterial endocarditis if the ear blood is examined, especially after massage of the ear. Thayer does not, however, record the finding of macrophages in any of the Johns Hopkins series; but a high mononuclear count was twice noted, once in a terminal staphylococcic case and once in endocarditis due to *Bacillus influenzae*. Their number is said to vary from hour to hour; the only time at which they are increased with any constancy is after transfusion. Fritz Joseph [17] found them in seven of eight instances of "malignant endocarditis." He took blood from the ear without previous rubbing, and found upward of 80 per cent in one instance. Sampson, Kerr and Simpson [18] report finding them in two patients, one with *Streptococcus viridans* endocarditis, the other with an unidentified streptococcus. Ottander [19] also has reported two cases, one due to an unidentified diplococcus, the other to *Streptococcus viridans*. He states that the finger blood showed only a few of these cells, while the ear blood almost suggested a leukemia. Hess [20] and other German observers report counts of more than 100,000 white cells in the ear blood while only 4,300 were obtained from the finger.

Until recently, at the University Hospital, no special effort was made to find such cells; in other words, the ear blood was not examined nor was the part massaged. However, in three patients with subacute viridans endocarditis there were counts with 10 or more per cent of monocytes, the highest being 24 per cent of a 12,400 total count. In this case, the patient was not peculiarly ill at the time and the rise in monocytes did not coincide with any clinical incident. One of the five cases of hemolytic streptococcus infection exhibited 26 per cent of monocytes at a time when the total white count was 5,200. At this time, three weeks before death, many of these cells were large, vacuolated and phagocytic (fig. 1). Similar cells, shown in figure 2, were recently found in large numbers in the ear blood of a patient with *Streptococcus anginosus* endocarditis. Also, in a terminal case of subacute viridans endocarditis not included in this series, many such cells were present in the ear blood (fig. 3), but very few in the blood from the finger.

Some writers emphasize the diagnostic importance of this "endotheliosis," as some term it, and it is true that such large numbers of these cells have very seldom been observed in any other condition than bacterial endocarditis. However, occasionally they have been found in typhoid, malaria, recurrent fever and various bacteremias.

PLATELETS

Very few platelet counts in subacute endocarditis are recorded either in this series or in the literature. The few which are available show an unexpectedly low number of platelets. One of our patients had only 14,000; another, 96,000. In one of Ottander's case records, the number of platelets fell as low as 50,000; in another thrombopenia was exhibited. Ottander makes the observation that the platelets are low at the times of the appearance of petechiae. This is at variance with the usual view of the origin of the petechiae and needs confirmation.

17. Joseph, Fritz: Deutsche med. Wchnschr. **51**: 863 (May 22) 1925.
18. Sampson, J. J.; Kerr, W. J., and Simpson, Miriam E: A Study of Macrophages in the Human Blood with Special Reference to Their Presence in Two Cases of Subacute Bacterial Endocarditis, Arch. Int. Med., **31**: 830 (June) 1923.
19. Ottander, Olle.: Acta med. Scandinav. **63**: 336 (April) 1926.
20. Hess, F. O.: München. med. Wchnschr. **72**: 205 (Feb. 6) 1925.

SUMMARY

1. Anemia is the rule when the disease is of long duration; it tends to increase toward the end and may become very severe. It is always of a chloro-anemic type.

2. The leukocyte count tends to stay within normal limits or a little above, but high leukocytosis, usually with a high polymorphononuclear percentage, readily arises on the occurrence of infarction, thrombosis or other complication.

3. A great increase in the circulating monocytes and the presence of many macrophages, while occasionally seen in other diseases, is strongly suggestive of bacterial endocarditis but is not peculiar to *Streptococcus viridans* endocarditis.

4. More platelet counts are needed to confirm or disprove the occurrence of thrombopenia.

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CARDIAC DISTURBANCES IN GOITER*

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In the study of a large series of cases of diseases of the thyroid gland, one is impressed with the frequency with which disturbances of the heart are encountered, particularly in cases of hyperthyroidism. These cardiac disturbances vary from a simple tachycardia, or tachycardia associated with various forms of arrhythmia, to cardiac decompensation with engorged liver, ascites and edema of the feet. The important practical problems in these cases are the following: 1. Is the condition of the heart such that an operation for relief of the hyperthyroidism can be safely performed? 2. Will the condition of the heart be improved by such an operation?

The association of cardiac disturbances with goiter was recognized as early as 1815 by Parry, who in his original description cited the case of a patient whom he had seen in 1786. Graves (1835), Basedow (1845), Stokes (1854) and Trousseau (1856) also mention the cardiac manifestations of cardiac disorder which may accompany diseases of the thyroid gland, while in 1878 Germain Sée [1] emphasized the fact that the association of irregularity of the heart with exophthalmic goiter had frequently been overlooked.

Before the development of the electrocardiograph, cardiac irregularities were not well understood, and in 1910 Bamberger,[2] who reported three cases in which paroxysmal tachycardia was associated with goiter, was able to collect only twenty-one cases from the literature. He mentions the fact that in some of these cases an irregularity of the heart was present, which would suggest that they were cases of paroxysmal auricular fibrillation. In 1918, Krumbhaar [3] reported the results of an electrocardiographic study of fifty-one cases of toxic

* From the Cleveland Clinic.
* Read before the Section on Practice of Medicine at the Seventy-Eighth Annual Session of the American Medical Association, Washington, D. C., May 20, 1927.

1. Sée, Germain, cited by Baumgartner, E. A.; Webb, C. W., and Schoonmaker, Hubert: Auricular Fibrillation in Goiter, Arch. Int. Med. **33**: 500-512 (April) 1924, reference 7.
2. Bamberger, cited by Baumgartner, Webb and Schoonmaker (footnote 1), reference 17.
3. Krumbhaar, E. B.: Electrocardiograhic Observations in Toxic Goiter, Am. J. M. Sc. **155**: 175-203 (Feb.) 1918.

goiter, in which sinus arrhythmia was found in four cases; ventricular extrasystoles in three cases; auricular fibrillation in three cases; auricular flutter in one case, and delayed conductivity in two cases.

In 1922, Hamilton [4] found eighteen cases of auricular fibrillation in a study of 200 cases of goiter in Lahey's clinic. He calls attention to the fact that few patients with goiter who are over 50 years of age fail to show some irregularity of the heart. In a subsequent communication in 1923, Hamilton reported the presence of cardiac failure with pulmonary congestion, orthopnea, engorgement of the liver and ascites in certain patients with goiter, and emphasized the fact that such a complication should not prevent operation on these patients, if the heart condition is improved by rest in bed and digitalis before the operation is undertaken. Lahey and Hamilton make the statement that "there is no comparable condition when persistent heart failure is consistently and safely cured by surgical measures."

In a general review of the subject, Baumgartner, Webb and Schoonmaker [1] state that "fibrillation may occur in hyperthyroidism in both adenoma and exophthalmic cases, and may be paroxysmal or permanent for months or years." These authors believe that "these patients should be given digitalis as other patients with fibrillation are given it, and operation should be performed even if there is fibrillation," and "that the gravity of the heart condition relative to thyroidectomy has been repeatedly overestimated."

Willius, Boothby and Wilson,[5] in a comprehensive study of 377 patients with either exophthalmic goiter or adenomatous goiter with hyperthyroidism, found constant auricular fibrillation in 8 per cent of their cases of exophthalmic goiter, and in 10 per cent of their cases of adenomatous goiter with hyperthyroidism. Intermittent auricular fibrillation occurred in 5 per cent of the cases of exophthalmic goiter, and in 4 per cent of the cases of adenomatous goiter with hyperthyroidism. Transient auricular fibrillation was present in 9 per cent of the cases of exophthalmic goiter, and in 10 per cent of the cases of adenomatous goiter with hyperthyroidism. These writers emphasize the fact that in both of these groups the development of auricular fibrillation did not depend so much on the intensity of the hyperthyroidism, as measured by the basal metabolic rate at the time of observation, as on the duration of the increased metabolic rate. Premature contractions were encountered in both groups, and sinus arrhythmia in patients with exophthalmic goiter, but these were considered to be of little or no significance. Few cases of paroxysmal tachycardia, auricular flutter or disorders of cardiac conduction were encountered. In a study of the pathologic changes in twenty-one fatal cases, Wilson found two instances in which the heart weighed 500 Gm. and 550 Gm., respectively. In each of sixteen cases the heart showed some degree of hypertrophy, the increase in weight averaging from 5 to 10 per cent; in eleven of these sixteen cases the patients were over 45 years of age.

Foster [6] has given an excellent general discussion of "goiter heart" in which he emphasizes the importance of controlling auricular fibrillation, since the mortality following thyroidectomy is higher in cases in which fibrillation is present. He states that a reversion to normal rhythm may be secured by proper treatment with rest, digitalis and quinidine.

In a study of our own series of cases we have considered that tachycardia is a natural accompaniment of hyperthyroidism, the elevation of the basal metabolic rate necessitating an increase in the cardiac rate or an increase in the volume output of each beat.

On the other hand, in our experience, the occurrence of extrasystoles or premature beats in cases of hyperthyroidism is due to some other cause, and we have not considered that these irregularities are a contraindication to operation, nor do they often disappear after operation.

Paroxysmal tachycardia is only occasionally seen in cases of exophthalmic goiter, but is sometimes present in cases of adenomatous goiter with or without hyperthyroidism. However, in some instances it is doubtful whether or not its presence is due to the goiter. One of us (J. P.) has seen one case in a patient with an adenomatous goiter without toxic symptoms; and it was interesting to note that this patient found she could stop the attack by running upstairs. In this case there have been no recurrent attacks of paroxysmal tachycardia since operation one year ago.

Heart block is seldom associated with hyperthyroidism, and when present is due to some other cause. Auricular flutter is seldom associated with hyperthyroidism, and we have seen only two cases, as compared with more than three hundred cases of auricular fibrillation.

Auricular fibrillation, according to our experience, which accords with that of the authors cited, is the type of cardiac irregularity which is most frequently associated with hyperthyroidism; and its recognition is of special importance, as, if not complicated by marked arteriosclerosis, it will usually disappear if the hyperthyroidism is relieved by operation before the heart has become permanently injured. For this reason we shall describe in particular the management of cases of auricular fibrillation.

AURICULAR FIBRILLATION

More than 300 cases in which auricular fibrillation has been associated with hyperthyroidism have been observed in the Cleveland Clinic during the last three years. In an article [7] which will appear in the near future, a study of 120 cases will be reported. In that article special emphasis is placed on seventy-five of those cases which had been followed for from three to six months or longer, so that the report of their condition could justly be classified as one of "end-results." That series, however, does not include all the cases in which auricular fibrillation was associated with hyperthyroidism, but only those in which it was so severe that the surgeon deemed consultation with the internist to be advisable. Now every case in which there is any evidence of auricular fibrillation, however slight, is referred to one of us (J. A.), and therefore the series of 120 cases which we are now reporting probably offers a truer picture of what we may expect in cases of this type.

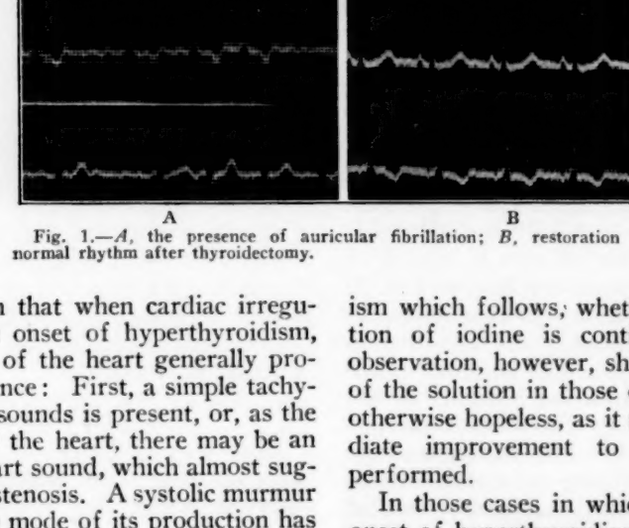
4. Hamilton, B. E.: Clinical Notes on Hearts in Hyperthyroidism, Boston M. & S. J. **86**: 216-218 (Feb. 16) 1922.
5. Willius, F. A.; Boothby, W. M., and Wilson, L. B.: The Heart in Exophthalmic Goiter and Adenoma with Hyperthyroidism, M. Clin. N. Amer. **7**: 189-219 (July) 1923.
6. Foster, N. B.: Goiter Heart, Am. J. M. Sc. **169**: 662-668 (May) 1925.

7. Phillips, John; and Anderson, J. P.: Am. J. M. Sc., to be published.

In five of the cases in this series, the patient's condition was such that an operation was contraindicated. Roentgen-ray therapy was resorted to, and the patients returned to their homes. Three of them have died. In thirty of the cases, the operations were not completed in time for end-results to be available for this report. In ten cases there appears to have been a transient auricular fibrillation, but the evidence was not sufficiently conclusive for the results to be of value. The report presented here has therefore been compiled from the data in the remaining seventy-five cases, in five of which there was a transient fibrillation lasting from a few hours to a few days; in ten, paroxysmal attacks over a long period, and in fifty-nine, continuous fibrillation.

Of these seventy-five cases, in three, or 4 per cent, the patients died. Two of these should be classified as cardiac deaths, as in one of them vegetative endocarditis was present, and in one the condition of the heart was extremely bad; the third must be classed as an operative death. Of the remaining seventy-two cases, in forty-three, or 60 per cent, the heart action has become regular after operation; in twenty-nine, or 40 per cent, cardiac regularity has not been reestablished.

The average age in the present group was 47 years; the oldest patient was 64 years of age, the youngest 22, and seven of the patients were under 35. It is of especial interest to note that in 68 per cent of this series the patients were women. As in the former series, the duration of cardiac irregularity varied, but in some cases there were clear-cut histories of complete cardiac irregularity for as long a period as fifteen or twenty years.



A B

Fig. 1.—*A*, the presence of auricular fibrillation; *B*, restoration of normal rhythm after thyroidectomy.

Our observation has been that when cardiac irregularity does not precede the onset of hyperthyroidism, the alteration in the action of the heart generally proceeds in the following sequence: First, a simple tachycardia without adventitious sounds is present, or, as the result of the overactivity of the heart, there may be an accentuation of the third heart sound, which almost suggests the murmur of mitral stenosis. A systolic murmur then often develops, and the mode of its production has been a much disputed point. But in any case it is functional, as it frequently disappears after operation. If hyperthyroidism (elevated basal metabolism) persists without relief, then some irregularity frequently follows; and, as we have pointed out, this is nearly always auricular fibrillation. The only therapeutic measure that will permanently control these cases is operation. The prime problem then that confronts the heart specialist and the surgeon is to get these patients into such a condition that an operation can safely be performed.

Of the seventy-five cases, 45 per cent did not show signs of heart failure; 20 per cent showed only slight signs, such as a palpable liver or slight edema; 20 per cent showed signs of moderate failure, such as basal râles and palpably enlarged liver with edema, and 15 per cent showed signs of gross heart failure with general anasarca. This is in contrast to the former series, in which 40 per cent showed slight failure and 20 per cent showed general anasarca.

The preoperative requirement is of such importance in these cases that it seems worth while to repeat here a rather complete outline of the salient features.

1. Absolute rest in bed.
2. A simple diet of high caloric value, with a restricted amount of concentrated proteins and stimulants such as coffee.
3. A daily fluid intake of 3,000 cc., or, in case of edema, 1,000 cc.
4. Compound solution of iodine (Lugol's solution), 15 minims (1 cc.), two or three times daily.
5. Tincture of digitalis, 2 cc. every four hours for six doses, and approximately 20 minims (1.2 cc.) three times a day thereafter.
6. The administration of sedatives—phenobarbital or bromides as preferred; morphine may be indicated in case of marked restlessness or insomnia.
7. If anasarca or edema is present the following measures may be employed: (*a*) ammonium chloride, 15 grains (1 Gm.), four times a day for two days before using merbaphen (novasurol), and throughout the period of treatment with merbaphen; (*b*) merbaphen, intravenously, from 0.5 to 1 cc. every three or four days.

This preoperative regimen is making it possible in many cases to eliminate ligations and to make the resection or partial resection the primary operation, a result that appears to be chiefly due to the use of compound solution of iodine.

It cannot be emphasized too strongly, however, that compound solution of iodine should not be used until it is certain that the patient is to be operated on, as the later effect of this medication appears to be a progressive aggravation of the hyperthyroidism which follows, whether the use of compound solution of iodine is continued or discontinued. This observation, however, should not contraindicate the use of the solution in those cases in which the prognosis is otherwise hopeless, as it may bring about enough immediate improvement to allow the operation to be performed.

In those cases in which fibrillation has preceded the onset of hyperthyroidism, it is not to be expected that either thyroidectomy or thyroidectomy plus treatment with quinidine will make the heart action regular, but that fact should not be a contraindication to operation.

As for the use of digitalis before the operation or between the ligations and the lobectomy, that is, before the hyperthyroidism is markedly reduced or cured, it should be borne in mind that in such cases digitalis does not reduce the action of the heart to a normal rate, and if large doses are used a toxic condition may be induced. On the other hand, if the generally effective doses are given, the heart action will be somewhat reduced, and to that extent the myocardium will be conserved. It would seem that the more pronounced the hyperthyroidism, the less effective the digitalis; but if the hyperthyroidism is temporarily reduced by the use of compound solution of iodine, then the effect of the digitalis is increased.

The following cases have been selected as illustrating the outstanding characteristics of these cases and the progress which may be expected:

REPORT OF CASES

CASE 1.—An unmarried woman, aged 49, came to the clinic, Dec. 4, 1925, complaining of nervousness, palpitation, nausea and vomiting, and shortness of breath. These symptoms had first appeared during the preceding April, since which time the attacks of nausea and vomiting had occurred about twice a week. She had lost about 15 pounds (7 Kg.) between April and October; since then she had gained a little. She also had had diarrhea at intervals during the preceding two months.

Physical examination revealed that the weight was 120 pounds (54.4 Kg.); the blood pressure was 150 systolic and 70 diastolic; the heart and pulse rate, 140 (irregular), and the temperature, 98. The heart was somewhat enlarged, the apex being in the seventh interspace, 5 inches (12.7 cm.) to the left of the median line. The heart was fibrillating but no definite murmurs could be heard. The liver was slightly enlarged and there was some swelling of the feet. There was a slight enlargement of the thyroid gland but no exophthalmos.

A diagnosis of acute hyperthyroidism and auricular fibrillation was made.

The patient entered the hospital and was put on the usual preoperative routine for cases of hyperthyroidism. Bilateral ligations were performed, followed by the removal, at intervals of five months, of the right and left lobes, respectively.

The pathologic diagnosis was: left lobe, moderate hyperplasia and colloid goiter; right lobe, moderate hyperplasia.

The auricular fibrillation was paroxysmal while the patient was in the hospital for ligations, and was continuous when she was in the hospital for her first lobectomy, but the action of the heart became regular after the first lobectomy and has remained so ever since.

CASE 2.—A man, aged 48, came to the clinic, Jan. 8, 1926, complaining of nervousness, a loss of 20 pounds (9 Kg.) in weight, and of palpitation and irregularity in the action of the heart which had been present for the past six months. He had first noticed an enlargement of the thyroid gland in September, 1925. He had been using iodized salt.

Physical examination revealed that the weight was 148 pounds, or 66.7 Kg. (usual weight 160 pounds, or 72.6 Kg.), the heart rate was 140; the pulse rate, 108, with irregular irregularity, and the blood pressure, 150 systolic and 60 diastolic. The thyroid gland was uniformly enlarged, with thrills over the superior arteries. The apex beat was felt in the seventh interspace in the anterior axillary line. There were no murmurs. The liver was palpably enlarged. There was edema of the lower extremities and of the abdominal wall.

A diagnosis was made of diffuse goiter with hyperthyroidism and auricular fibrillation.

The patient entered the hospital and was put on the usual preoperative routine for cases of hyperthyroidism for three weeks. A complete thyroidectomy was then performed.

The pathologic diagnosis was slight hyperplasia of the thyroid gland.

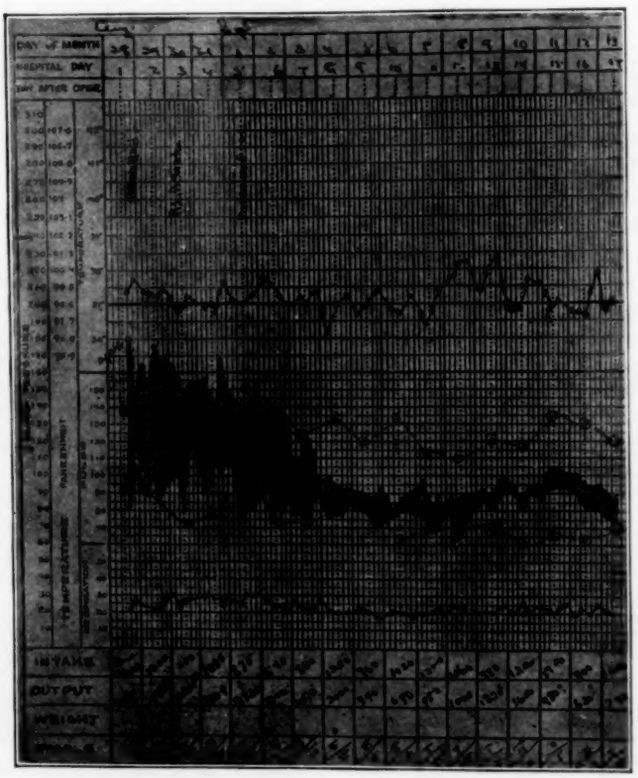


Fig. 2.—Hospital chart of patient with hyperthyroidism and auricular fibrillation, the shaded portion of which shows the heart and pulse beats on entrance and the improvement under the therapeutic regimen instituted in the hospital.

The patient's heart continued to fibrillate persistently after operation and was still fibrillating when he was discharged from the hospital. However, when he returned for observation one year after the operation, he reported that his heart action had become regular about three months after the operation and had remained so. An electrocardiogram confirmed this observation, as it showed a normal rhythm with normal conduction.

CASE 3.—A married woman, aged 37, came to the clinic, March 31, 1926, because of goiter, increasing nervousness, and a rapid heart. She had first noted the goiter about three years before; the condition had gradually become worse, and recently she had noticed edema of the lower extremities and that she became fatigued very easily. For two years she had used iodine internally, and during the preceding three years had used iodized salt.

Physical examination revealed that the weight was 147 pounds, or 66.7 Kg. (usual weight 150 pounds, or 68 Kg.), the temperature, 98.6; the blood pressure 140 systolic and 70 diastolic; the heart and pulse rate, 104. There was a diffuse enlargement of the thyroid gland, the right lobe of the gland being somewhat larger than the left, with well marked pulsation of the vessels. The heart was enlarged to the left. There was slight edema of the lower extremities.

A diagnosis of moderately severe hyperthyroidism was made, with auricular fibrillation.

The patient entered the hospital and ligations were performed, followed by lobectomies, which were performed April 1 and Nov. 5, 1926, respectively.

The pathologic diagnosis was colloid adenomas of the left lobe, and fetal adenomas of the right lobe.

Fibrillation continued in spite of diagitalis and extra rest, and quinidine was therefore prescribed—5 grains (0.3 Gm.) three times a day for four days. Following this medication the heart action became regular, and an electrocardiogram, March 5, 1927—four months after the final lobectomy—showed a normal rhythm.

In another case, one of extreme hyperthyroidism with auricular fibrillation, which will be reported in the forthcoming paper,[7] already referred to, the heart action became entirely regular about two weeks after the patient left the hospital. An electrocardiogram taken five months after the final operation showed that the rhythm was still regular. One year and ten months after her operation the patient reported that her heart had remained regular until about two months previously, when she had been under treatment for varicose ulcer. Iodine had been given by mouth, and after two weeks of this treatment the right lobe of the thyroid enlarged suddenly and became sore, and there were attacks of rapid and irregular heart action. Both of these symptoms subsided promptly when the iodine therapy was discontinued. At the time of this last visit the heart rhythm was again entirely regular.

This case is of particular interest because it emphasizes the apparently direct relation between hyperthyroidism or hyperiodinism and the development of auricular fibrillation.

SUMMARY

The occurrence of auricular fibrillation does not appear to bear any relation to the type of goiter that may be present, but rather it appears to depend entirely on the presence and duration of the hyperthyroidism. It is most frequently associated, however, with colloid goiters with adenomatous nodules.

Auricular fibrillation is most frequently associated with hyperthyroidism in persons over 45 years of age in whom some degree of arteriosclerosis is already present.

Adenomas of the thyroid gland appear to produce cardiac irregularity in some cases before hyperthyroidism has been manifested by an increase in the metabolic rate.

In every case of goiter, whether or not hyperthyroidism is manifested, an examination of the heart should be made to determine the presence of any cardiac irregularity, as it is of utmost importance that treatment be instituted before serious heart injury has taken place.

CONCLUSIONS

The following conclusions are based on our observations in a second series of 120 cases of auricular fibrillation associated with hyperthyroidism:

1. In seventy-five of the cases in which operation was performed end-results could be obtained, and in forty-three, or 60 per cent, of these cases the action of the heart became regular after the removal of one or both lobes of the thyroid gland. We feel justified in concluding, therefore, that thyroidectomy is indicated in these cases.

2. If the heart action does not become regular after thyroidectomy, treatment with quinidine may restore the normal rhythm.

3. Even in cases in which the heart action is not restored to a normal rhythm, thyroidectomy will improve the heart action and the rate can be controlled by digitalis.

4. The use of digitalis and of compound solution of iodine for from a week to ten days prior to operation is advisable.

Euclid Avenue at Ninety-Third Street.

[EDITORIAL NOTE.—This paper, together with that of Dr. Pepper, which precedes it, and the paper of Drs. Stone and Vanzant, to appear next week, constitute a symposium on heart disease. The discussion will follow the paper to be published in our next issue.]

Effective Preventive Medicine.—In order to promote properly the principles of preventive medicine it is important that only such services as are truly prophylactic shall be a part of the health center, leaving the curative field to the practitioner, hospital and existing dispensaries. Only in that way can the health center be made to emphasize prevention of disease. It is assumed that in the modern health center will be found the various activities of the health department, which must necessarily include maternal and baby welfare, epidemiologic service, food and sanitary inspectors, dental service for young children, facilities for transmission of serum therapy for the prevention of various communicable diseases; in short, a decentralization of board of health activities, so that service may be brought right into the neighborhood.—Wilinsky, C. F.: *Am. J. Pub. Health* **17**:679 (July) 1927.

THE DIAGNOSIS AND TREATMENT OF BRONCHIECTASIS *

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CHICAGO

Bronchiectasis is an infection in a pathologic dilatation of one or more bronchial segments. Various coexisting stages of inflammatory thickening, ulcerative thinning and cicatricial contraction of the bronchial walls characterize the pathologic anatomy and determine the clinical manifestations of the disease. The infection may remain limited to the bronchial walls or extend into the lung parenchyma with resulting sclerosis or pulmonary abscess, or both.

Bronchiectasis may be unilateral or bilateral, localized or diffuse, cylindric, saccular or fusiform. It usually affects the lower lobes only, the left more often than the right. The dilatations of the bronchi may be congenital or acquired. In the congenital type, infection determines the onset of symptoms. In the acquired, infection and various mechanical factors play a variable combined rôle in producing the dilatations.

DIAGNOSIS

The diagnosis of bronchiectasis has been based essentially on the presence of a chronic cough with purulent sputum and on the roentgenologic exclusion of other disease conditions. The cough usually occurs in attacks at certain regular intervals, often brought on by change of body position, especially by stooping over. The sputum varies in different individuals from under 100 cc. to more than 1,000 cc. per twenty-four hours. It is always purulent, but may or may not be foul smelling. Blood streaked sputum or small amounts of bright blood was raised at intervals in more than half the cases under my observation. Occasionally, the hemorrhage is severe. Two of my patients died of hemoptyses. Clubbing of the fingers is frequently present but not characteristic. The general condition of the patient usually remains good, often for many years. Fever, weight loss and night sweats suggest an extension of the infection through the bronchial walls. Cyanosis and dyspnea indicate myocardial injury, but it is important to bear in mind that the heart is injured long before such signs supervene.

The physical abnormalities are often limited to a few râles. Dulness or tympany and changed respiratory fremitus vary with the extent of the disease, the size of the cavitations and the position of the patient.

The roentgenogram, in the past, has been of value chiefly in the differentiation of other disease conditions producing somewhat similar clinical manifestations but yielding characteristic roentgenologic pictures, such as pulmonary abscess, empyema with bronchial fistula or pulmonary tuberculosis. The roentgenogram in bronchiectasis often does not show pathologic changes, or at most there are a few linear shadows of uncertain significance. Early lesions and those behind the dome of the diaphragm or heart and those superimposed on a pleural shadow are not demonstrable. The question of unilateral or bilateral involvement is indeterminate in a large proportion of the cases, and the type and extent of bronchiectatic dilatation remain unknown.

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* Read before the Section on Surgery, General and Abdominal, at the Seventy-Eighth Annual Session of the American Medical Association, Washington, D. C., May 19, 1927.

With the introduction of iodized oil as a contrast medium in roentgenography, these difficulties and uncertainties have been largely obviated, and now for the first time there is available a method of diagnosis of bronchial lesions comparable in every respect with the contrast medium diagnosis in gastro-intestinal and urinary tract disease. The dilated bronchi, whereever located, can be visualized, and their type and distribution studied. In the presence of dense pleural shadows we have now a means of certain differentiation between bronchiectasis, empyema with bronchial fistula, multiple abscess and pulmonary tuberculosis. The method safe and easy of application, whether by the supraglottic, transglottic or subglottic method, or by passive inhalation. The technic of the subglottic method is described in an earlier article.[1]

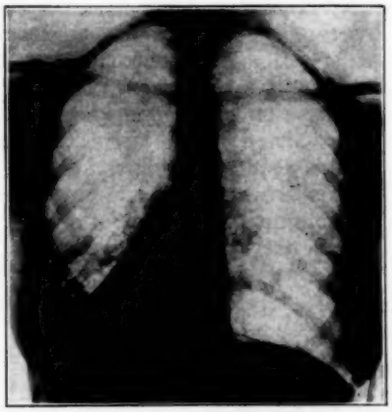


Fig. 1.—Left lung bronchiectasis, before iodized oil injection; sputum from 500 to 1,000 cc. in twenty-four hours.

Archibald [2] has listed a formidable array of "potential dangers" which, at least as far as nontuberculous cases are concerned, seem to me dangers only in the sense that any slight surgical procedure involves potential dangers. Injecting the oil into the trachea through a small hypodermic needle does not call for intratracheal anesthesia, and the risk of local infection in a hypodermic needle stab is certainly minimal. The anesthesia used in the oral route should be no more dangerous that that used for other routine intra-oral procedures. The dangers incident to the bronchoscopic method would seem to me those of bronchoscopy as such. If the oil is swallowed, it can be removed with the stomach tube. The alleged risk of inciting cough or spreading infection by 40 cc. of a bland oil in the case of a person who daily for years perhaps has coughed up from 100 to 1,000 cc. of infected sputum is, I believe, negligible. In bronchiectasis, in my experience, no oil is retained in the lung. The percentage of complications certainly is small and entirely justifiable in all nontuberculous cases in which it is necessary to establish a detailed diagnosis. There is reason to anticipate that the application of this method will prove bronchiectasis to be the most common thoracic disease after pulmonary tuberculosis. It will be possible to make the diagnosis early while the disease is amenable to treatment, and to recognize clinically the so-called dry type of bronchiectasis with recurrent hemoptysis. We shall learn to differentiate types and the kind of operation especially suitable to each, and we shall be able to exclude from consideration of radical treatment the cases with bilateral lesion.

1. Hedblom, C. A., and Head, J. R.: On the Use of Lipiodol in Relation to Thoracic Surgery, Ann. Surg. **81**: 194-205 (Feb.) 1927. In the last 150 injections we have discarded the special trocar and cannula, injecting the warmed oil through an ordinary hypodermic syringe and without any preliminary injections of procaine hydrochloride into the trachea. This method combines simplicity, safety and a minimum of trauma.

2. Archibald, Edward; and Brown, A. L.: Dangers of Introducing Iodized Oil into the Tracheobronchial System, J. A. M. A. **88**: 1310-1315 (April 23) 1927.

During the last sixteen months my associate, Dr. Jerome Head, and I have studied sixty-three cases; forty-five were unilateral and eighteen bilateral; twenty-four were of the cylindric, twenty-nine of the saccular, and five of the fusiform type. In five others the type was uncertain; forty-nine were localized to the base; four were apical; two were limited to the middle lobe, and six were generalized throughout one or both lungs. In a series of 316 cases which I studied before the introduction of iodized oil, 36 per cent were diagnosed as unilateral, and 28 per cent as bilateral. This localization was probably erroneous in a considerable proportion of these cases. In 36 per cent the question of unilateral or bilateral involvement was put down as indeterminate.

TREATMENT

The surgical treatment of bronchiectasis has been generally conceded to be the most thankless task in the whole field of thoracic surgery. The operative mortality has been high, and the results in the great majority of cases merely palliative. This has been due not only to the difficulties inherent in the nature of the disease but also to incomplete and faulty diagnosis, and the consequent inability to choose the type of surgical treatment best adapted to the individual case, and to late operation after advanced inflammatory changes. Inability to determine the type and extent of the process, and especially to recognize with certainty the cases of bilateral involvement, has led perhaps to exclusion of favorable cases, on the one hand, and to operation in unfavorable cases, on the other. Thickening, ulceration and cicatricial stenosis in the bronchi, and the infection and sclerosis of lung parenchyma incident to long continued suppuration, lessen the effectiveness of operative compression of the lung. Myocarditis and nephritis, from chronic toxic absorption, and hypertrophy and dilatation of the right heart, from increased pulmonary venous pressure, have contributed largely to the postoperative mortality. Injury to these vital organs is probably always greater than ordinary clinical manifestations would indicate.

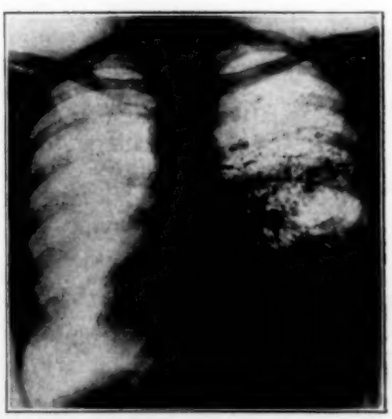


Fig. 2.—Paralyzed elevated diaphragm following phrenico-exeresis. Iodized oil injection shows compressed dilatations. Patient was symptom free from shortly after operation to date—a period of nine months.

Early diagnosis, differentiation of types of dilatation, and well advised choice of surgical treatment while the process is limited and the tissues elastic, and before other vital organs have become injured, may reasonably be expected greatly to improve the results of surgical treatment. Roentgenography with iodized oil bids fair to bring this about. The principles of the surgical treatment of bronchiectasis have been drainage, pulmonary compression and extirpation of the diseased portion of the lung.

DRAINAGE

Drainage in the ordinary sense has a very limited but definite field of usefulness. In the rare type of a

single bronchiectatic cavitation, it is the treatment of choice. If the pleurae are not adherent, a two stage operation is performed as for pulmonary abscess. Following drainage, the cough and sputum disappear, but the resulting fistula does not heal spontaneously and no effort should be made to close it until it has ceased to drain pus. In two such cases in my experience, the fistulas continued to drain but the patients remained free from symptoms during three years of observation.

A second indication for simple drainage is a sudden change in the clinical picture characterized by high fever with very foul sputum, indicating perforation of a bronchiectatic cavity into the lung with resulting gangrene. Prompt drainage may be life saving.

In the usual diffuse type of bronchiectasis, drainage in the ordinary sense was attempted by Tuffier,[3] Batzdorff,[4] Körte,[5] Garré,[6] Frehan[7] and others, and was abandoned as highly ineffective and dangerous. Only if the opening of the diseased lung is so extensive as to approach in effect a partial cautery lobectomy is material improvement to be expected from drainage. Brauer[8] writes that in his opinion preliminary ligation of the pulmonary artery to the diseased lobe and opening of the bronchial dilatations in several sittings is the best type of treatment.

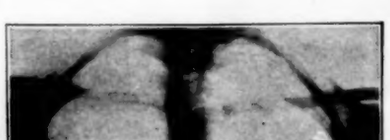


Fig. 3.—Visualization of dilated bronchi after iodized oil injections.

PULMONARY COMPRESSION

The principle of pulmonary compression in the treatment of bronchiectasis has been assailed, particularly by older writers, as irrational and unsatisfactory. It is stated that the bronchiectatic lung is not compressible, and that even if it were the sclerosed condition of the bronchial walls would prevent their collapse. It is pointed out that the epithelium-lined cavitations could never be expected to heal. Reference was made to the relatively small number of cases in which lung collapse had been achieved by rib resection, in which the operative mortality was high and the results in patients that survived operation were palliative only. Brauer is quoted as saying that he does not know of any case cured by thoracoplasty.

Later results of pulmonary compression largely refute these statements. That the lung in uncomplicated bronchiectasis is compressible to a degree equal to that in cases of pulmonary tuberculosis is a demonstrated fact. It is only in cases of marked secondary inflammatory involvement of the lung parenchyma that the lung is relatively uncollapsible. It is true that the much thickened bronchiole with a narrow lumen is incompressible, but the saccular or fusiform dilatations which are characteristic pathologic features as demonstrated by bronchography with iodized oil, and which it would seem reasonable to assume secrete most of the pus, are compressible as demonstrated by the roentgenogram taken after the administration of iodized oil (fig. 2). The earlier high operative mortality occurred among patients in whom an extensive thoracoplastic collapse was performed in a one stage operation under general anesthesia. It has since been shown that if a thoracoplastic collapse is performed in graded stages and under local or combined regional and gas anesthesia, the operative mortality is low. The unsatisfactory results with the earlier patients who survived operation it would seem may be accounted for in large part, at least, by a too limited rib resection and by the difficulty before visualization with iodized oil of selecting the cases most suited to this operation. Many cures and improvements in symptoms approximating a cure in a considerable proportion of the cases are reported in the later literature.

The principles of pulmonary collapse in bronchiectasis are analogous in important respects with those in pulmonary tuberculosis. Collapsing the diseased lung puts it at rest, slowing the lymph stream and the rate of toxic absorption. Myocarditis, nephritis, arthritis and amyloidosis constitute ample evidence of insidious toxic absorption. Fibrous tissue present is enabled to contract. The collapsed condition of the lung brings about further extensive fibrosis. This I have been able to confirm in lobectomy and necropsy specimens (fig. 4). The collapse of the bronchiectatic cavities, even though only partial, lessens the amount of purulent secretion in some cases with surprising promptness. Lilienthal has said that in one of his cases it was like turning off a faucet. Mechanical and cicatricial contraction of the dilatations makes possible healing of opposing ulcerated surfaces. The lessening of cough and purulent secretion and the fibrous tissue occlusion of normal bronchi limit the dissemination of the infection. Collapse and fibrosis lessen the tendency to hemorrhage. The methods of pulmonary compression are pneumothorax collapse, phrenico-exeresis, extrapleural thoracoplasty and pneumolysis.

PNEUMOTHORAX COLLAPSE

Pneumothorax collapse is a rational method if the principle of pulmonary compression is accepted. Safety, ease of performance and the possibility of ultimate restoration of lung function recommend it. It is naturally limited to those cases in which the pleurae are not adherent, and it possesses the inherent disadvantage that refills are necessary for a prolonged period of time even if it is safe ultimately to allow the lung to reexpand. My experience with the method is limited to two cases in which it was used as a therapeutic test of possible involvement of the other lung. Instances of improvement approximating symptomatic cure have been reported by Unverricht,[9] Rist,[10] Singer and Graham,[11] Perkins and Burrell,[12] and others. Tilman[13]

3. Tuffier: Abcès gangreneux de poumon ouvert dans les bronches etc., Bull. et. mém. Soc. de chir de Paris, 1911.
4. Batzdorff, E.: Die chirurgische Behandlung der Bronchiektasie, Centralbl. f. d. Grenzgeb. d. Med. u. Chir. **16**: 1-18, 1913.
5. Körte, W.: Erfahrungen über Operation wegen Lungen-Eiterung und Gangrän, Arch. f. klin. Chir. **85**: 1-62, 1908.
6. Garré: Die Chirurgische Behandlung der Lungenkrankheiten, Mitt. a. d. Grenzgeb. d. Med. u. Chir. **9**: 322-337, 1902.
7. Frehan, quoted by Sauerbruch: Chirurgie der Brustorgane, Berlin, Julius Springer **1**: 583, 1920.
8. Brauer, L.: Ueber Pathologie und Therapie des Bronchiektasin, München med. Wchnschr. **72**: 964-965, 1925.
9. Unverricht, W.: Ueber die Behandlung von Bronchiektasien mit kunstlichem Pneumothorax, Ztschr. f. Phys. u. diätat. Therap. **23**: 343-400, 1919.
10. Rist, E.: Un cas de bronchiectasie guérie par le pneumothorax artificiel, Bull. et mém. Soc. méd. de hôp. de Paris **43**: 652 (July 4) 1919.
11. Singer, J. J., and Graham, E. A.: The Newer Treatment of Bronchiectasis, J. Missouri M. A. **19**: 390-393 (Sept.) 1922.
12. Perkins, J. J., and Burrell, L. S.: Artificial Pneumothorax: Its Application to Cases Other Than Pulmonary Tuberculosis, Lancet **1**: 478-480 (March 10) 1923.
13. Tilman, J.: Ueber die Pneumothorax behandlung der "Chronischen Bronchiektasien," Acta med. Scandinav. **59**: 515-549, 1923.

reports sixty-five collected cases. In cases in which a pulmonary collapse was achieved eleven were slightly improved, seventeen markedly improved and sixteen, or 36.3 per cent, remained completely free from symptoms during the period of observation of from six months to more than one year. Pneumothorax collapse will probably find a definite field of usefulness in very early cases, particularly in children.

PHRENICO-EXERESIS

Phrenico-exeresis, or extraction of the phrenic nerve resulting in paralytic relaxation of the diaphragm, brings about a partial collapse of the lung estimated at from 20 to 30 per cent of its original volume.

It is a simple, safe operation that may be attempted in cases in which pleural adhesions prevent pneumothorax collapse, or as a tentative method preliminary to thoracoplasty. The relaxed condition of the diaphragm facilitates the evacuation of the purulent sputum, and so lessens the cough and improves drainage. Surprisingly good results and even complete symptomatic cures during the period of observation have, however, been reported from its use. Chauffard and Ravina,[14] Davies,[15] Bagendörfer,[16] Rist[17] and Bishop[18] report such cases. During the last sixteen months I have performed phrenico-exeresis in twenty-two cases. Two of the patients are symptomatically cured, being entirely free from cough and sputum and having gained markedly in weight. In five, the sputum was decreased from 50 per cent to 80 per cent and brought in each case below 1 ounce in twenty-four hours. Four other patients were appreciably improved, and in four the sputum was reduced in amount but was still so copious that the patients did not appreciate the reduction. In one case the exeresis failed to produce paralysis of the diaphragm. In six no definite improvement was noted. Judging from these results, it would seem that the method has some promise, particularly in early cases and in children whose tissues are relatively elastic and on whom one is especially reluctant to perform more radical operations.

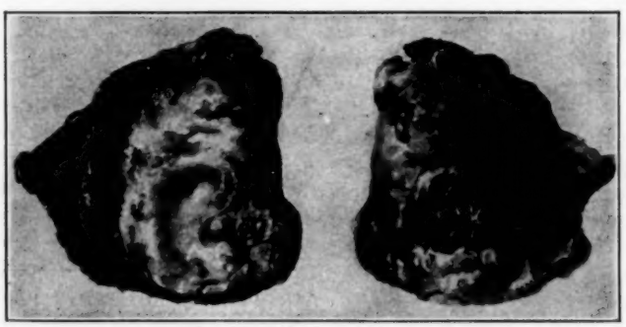


Fig. 4.—Drawing of surface (right) and cross-section (left) of lung removed by secondary lobectomy about four years after thoracoplasty. Note fibrosis and presence of only one fair-sized residual bronchus.

EXTRAPLEURAL THORACOPLASTY

Extrapleural thoracoplasty involves the collapse of the diseased portion of the lung by extensive rib resection. Of all the methods of compression, it is the most generally applicable. The pulmonary collapse is relatively complete and is permanent. It is not limited by pleural adhesions. The risk of complicating empyema is small. In case the pulmonary collapse does not sufficiently relieve the symptoms, it prepares the way for later lobectomy or cautery extirpation.

The thoracoplasty may be performed by typical posterior resection according to the method of Sauerbruch, or by a resection of the whole length of the lower ribs. The posterior resection is the simplest and may safely be performed in stages. It is, however, open to the objection that the whole lung is collapsed for disease involving typically the base of the lower lobe only. Resection of the posterior segments of the lower ribs only never results in a very extensive collapse of the lower lobe. It is the drop of the whole chest wall made possible by sectioning all the ribs, including the first, that effects the complete collapse by this operation.

The upper part of the lung may be maintained uncollapsed with extensive collapse of the base only by resecting the whole length of the lower ribs, usually from the third or fourth to and including the eleventh. The intact upper two or three ribs maintain the apex uncollapsed and the middle portion of the lung in a condition of partial collapse only. Phrenico-exeresis, by raising the diaphragm against the diseased base of the lung, aids materially in compressing the diseased lower lobe and should always precede the thoracoplasty. Complete costectomy of all the lower ribs in one stage should not be attempted on account of the high mortality rate from shock and pus retention pneumonia. The resection of the whole lengths of the lower ribs may be performed in stages through a long intercostal incision turning back the soft tissues; later the whole length of the upper ribs may be resected in one stage through two incisions, the one paravertebral, the other midaxillary. A five stage operation resecting the posterior segments first through a paravertebral incision in two stages, the anterior portions at the third stage through a parasternal incision, and the remaining lateral segments in two stages, the lower through an intercostal and the upper through a midaxillary incision, is in my experience the safest and therefore to be recommended.

Ligation of the pulmonary artery with secondary thoracoplasty, as practiced by Schumacher[19] and by Sauerbruch,[20] is a logical combination, the thoracoplasty making possible the shrinkage of the lung from the fibrosis induced by the pulmonary ligation.

THE RESULTS OF THORACOPLASTY

The older literature on the subject contains a few reports of the results in a relatively small number of cases. Hansen[21] tried the method in two cases without benefit. Mumford and Robinson[22] lost two patients and nearly lost a third following operation. Lenhartz[23] reports two extensive rib resections follow-

14. Chauffard, A., and Ravina, A.: Phrenectomy in Bronchiectasis, Bull. et. mém. Soc. méd. de hôp. de Paris **49**: 224 (Feb. 13) 1925.
15. Davies, H. M.: Phrenic Evulsion as an Aid in Treatment of Pulmonary Tuberculosis and Bronchiectasis, Brit. M. J. **1**: 315-320 (Feb. 20) 1926.
16. Bagendörfer, L. (Würzburg): Zur Phrenikotomie bei Bronchiektasie, Therap. d. Gegenw., vol. 1-xiii, pp. 203, 1922.
17. Rist, M. E.: Un cas de bronchiectasie juxto-diaphragmatique guéré par la phrénicotomie, Bull. et mém. Soc. méd. de hôp. Paris, **48**: 1672-1675 (Dec. 5) 1924; abstr. J. A. M. A. **84**: 403 (Jan. 31) 1925.
18. Bishop: Personal communication to the author.
19. Schumacher: Ueber die Bronchiektasie, Tr. III Kongress der Internationalen Gesellschaft für Chirurgie im Brussel, 1911.
20. Sauerbruch, F.: Chirurgie der Brustorgane, Berlin, Julius Springer, **1**: 586-587, 1920.
21. Hansen, P. N.: The Surgical Treatment of Bronchiectasis (Report of Four Cases of Bronchiectatic Cavities Treated by Lung-Lobe Resection), Nord. med. Ark. **1**: 1-24, 1917.
22. Mumford, J. G., and Robinson, Samuel: The Surgical Aspects of Bronchiectasis, Tr. Am. Surg. A. **32**: 688-696, 1914.
23. Lenhartz, Hermann: Zur operativen Behandlung des Lungenbrandes, Mitt. a. d. Grenzgeb. d. Med. u. Chir. **9**: 338-360, 1902.

ing which one patient was cured and the other improved. Küttner [24] records one patient whose symptoms had not recurred seven months after operation. Luxembourg [25] obtained a cure following thoracoplasty combined with apicolysis. Three of Lilienthal's [26] patients improved and one died. Davies [27] and Wilms [28] each had one case, each with favorable results. Guibal [29] records one case with benefit. Körte [5] lost one case from brain abscess; the results in a second were uncertain, and a third was completely cured. Santy and Guilleminet,[30] Jex-Blake,[31] and others report cured cases. Sauerbruch [20] obtained permanent improvement in all of eleven patients with postpneumonic bronchiectasis treated by thoracoplasty, and in five of twenty-seven with disease of unknown etiology; three died following operation.

In 1924 I [32] recorded the case histories of seven patients and in 1926 [33] the late results in these and histories of seven additional patients, on whom I had performed a five or more stage graded thoracoplasty using the posterior, anterior and lateral incisions. There was no early or late postoperative mortality. There was marked decrease in cough and in the amount of sputum of from 60 to 100 per cent, with gain in weight and general improvement in all cases during the first weeks following operation. All these patients have been traced to date or to within a few months of the present time.

Marked improvement from operation but the subsequent death of three of these patients was recorded in 1926, one from hemorrhage two years after operation and two from other causes ten months and two years, respectively, after operations. Four are in good general condition but continue to raise more than 25 per cent of the amount of sputum raised before operation. Three of these four are working. Four raise from 30 to 90 cc. habitually or occasionally, but are otherwise well and working. Three are absolutely free from cough and sputum.

Of nine additional patients whose records have not hitherto been published, two died following a three stage operation from pneumonia, in my opinion due to retention of sputum from a too rapid chest collapse. In four the sputum was reduced from 30 to 90 cc. in twenty-four hours. In three of them secondary lobectomy was undertaken as detailed below. The fourth died suddenly of profuse hemoptysis two years after operation; three are unfinished cases that promise well so far.

EXTIRPATION OF THE DISEASED LUNG

From the standpoint of pathologic anatomy primarily, lobectomy would seem to be the operation of choice in bronchiectasis, but in actual experience so far, the proportion of complete cures has been small and the mortality high. Willy Meyer,[34] in 1914, wrote that up to that time there had been sixteen lobectomies with eight deaths. In 1915 he reported the case of another patient on whom he had operated successfully. Robinson,[35] in 1917, reported seven cases with three deaths. Hitzrot [36] reported one operative recovery. Hansen [21] had four cases with one death. Sauerbruch [20] performed a single stage lobectomy on three patients, all of whom died of tension pneumothorax following breaking open of the stump. Lilienthal [37] reports twenty-one cases; twelve patients died, seven recovered, and one still had symptoms and was still convalescent. Guibal [29] records one cure, and Graham [38] adds three cases with one death. In a total of sixty-two cases, there was a mortality of 46 per cent. According to Graham there was only 17 per cent of complete cures in forty cases reviewed by him. From these figures it would seem that until the technic of primary lobectomy can be so perfected as to reduce the operative mortality and bring about healing of the bronchial fistula in a large proportion of the cases, it will be largely replaced by safer, even though fundamentally less rational, procedures.

LOBECTOMY AFTER EXTRAPLEURAL THORACOPLASTY

It has been demonstrated that extrapleural thoracoplasty is a relatively safe operation resulting in improvement approximating a symptomatic cure in a large proportion of the cases. If the symptoms are not relieved, it serves as a preparatory operation to secondary lobectomy. The pleural cavity is obliterated by adhesions, lessening the tendency to empyema. The disturbance to respiration and circulation incident to a primary lobectomy are obviated. Ample exposure can easily be secured by wide incision without any marked symptoms of pneumothorax. Sauerbruch [20] writes that the marked shrinkage of the lung and hilum is very favorable for lobectomy, and he did not observe any tendency for the stump to retract into the hilum. He has performed such a secondary operation in seven cases, with one death and with favorable results in the others. Krause,[39] Heidenhain,[39] Archibald [40] and de Quervain [41] report successful cases. I have completed one secondary lobectomy. The patient was greatly improved by thoracoplasty performed four years before, the sputum having been reduced from more than 500 cc. in twenty-four hours to less than 100 cc., and he was able to work at hard manual labor. During the last year, however, there was a slight increase of cough and sputum with occasional attacks of chills and fever, and he had one severe hemoptysis. The lobectomy was performed in two stages. He has been free from symptoms since. In a second case, the patient returned six months after thoracoplasty on

24. Küttner, H.: Diffuse Bronchiektasien und grosse bronchiektatische Kaverne; Pneumolyse; Ausgedehnte Thoraxresektion in der Unterdruckkammer; Vollkommene Heilung, Beitr. z. klin. Chir. **60**: 29-32, 1908.
25. Luxembourg, H.: Ein Beitrag zur Behandlung von Bronchiektasien mittels extrapleuraler Thorakoplastik, Mitt. a. d. Grenzgeb. d. Med. u. Chir. **21**: 637-646, 1910.
26. Lilienthal, H.: Pulmonary Abscess and Bronchiectasis, Ann. Surg. **59**: 855-883, 1914.
27. Davies, H. M.: Bronchiectasis Treated by Rib Mobilization (Wilms), Proc. Roy Soc. Med., Clin. Soc. **8**: 33-34, 1915.
28. Wilms: Eine neue Methode zur Verengerung des Thorax bei Lungentuberkulose, München. med. Wchnschr. **58**: 777, 1911.
29. Guibal, M. L.: Sur le traitement chirurgical de la dilatations bronchique, chronique, quatre observations, personnelles, Bull. et. mém. Soc. Nat. de clin. de Paris **1**: 312-323, 1924.
30. Santy, P., and Guilleminet, M.: La thoracoplastie extrapleurale dans la dilatation des bronches, Lyon chir. **21**: 161, 181 (March-April) 1924.
31. Jex-Blake, A. J.: Bronchiectasis, Brit. M. J. **1**: 591-594 (May 1) 1920.
32. Hedblom, C. A.: Graded Extrapleural Thoracoplasty in the Treatment of Diffuse Unilateral Bronchiectasis, Arch. Surg. **8**: 395-406 (Jan.) part 2, 1924.
33. Hedblom, C. A.: Graded Extrapleural Thoracoplasty, Ann. Clin. Med. **4**: 921 (May) 1926.
34. Meyer, Willy: On Bronchiectasis, Tr. Am. Surg. A. **32**: 592-618, 1914.
35. Robinson, Samuel: The Resection of Lobes of the Lung, J. A. M. A. **69**: 355-358 (Aug. 4) 1917.
36. Hitzrot, J. M.: Lobectomy for Bronchiectasis, Ann. Surg. **71**: 785-787, 1920.
37. Lilienthal, H.: Resection of the Lung for Suppurative Infections with a Report Based on Thirty-One Operative Cases in Which Resection was Done or Intended, Ann. Surg. **75**: 257-320 (March) 1922.
38. Graham, E. A.: The Surgical Treatment of Bronchiectasis, with a Report of Three Cases of Removal of a Lobe of the Lung, Arch. Surg. **6**: 321-336 (Jan.) part 2, 1923.
39. Quoted by Sauerbruch (footnote 20).
40. Archibald, Edward: The Surgical Treatment of Bronchiectasis, Canada M. A. J. **14**: 197-202 (March) 1924.
41. De Quervain: Die chirurgische Behandlung der Bronchiektasien (in discussion), Ber. über die Verhandlung der deutsch. Gesellsch. f. Chir., Berlin **41**, April, 1912; Cor.-Bl. f. schweitz Aerzte **42**: 356, 1912; abstr. Zentralbl. f. Chir., 1912, pp. 40-41; I. M. P., 1912, p. 718.

account of persistence of cough, with about 60 cc. of purulent sputum in twenty-four hours, and because of an occasional attack of fever. The lung was separated from the chest wall without any tearing, and an iodoform gauze pack inserted around it preliminary to a second stage lobectomy. The patient was in splendid condition following operation, being able to eat her supper that day. On the third day she developed fever and substernal pain. A smear from the exudate around the pack showed streptococci. Exploratory pericardiocentesis was negative. She died one week after operation. Necropsy showed an acute pericarditis. In a third case, the sputum had been reduced from 360 cc. to 150 cc. in twenty-four hours by a thoracoplasty performed three years before. After a year, a wide open cautery drainage of an abscess cavity near the surface of the lung reduced the sputum to less than 100 cc. in twenty-four hours. The patient returned after eight months in the hope that he might be relieved entirely of his symptoms. A partial mobilization of the lung was effected at the first stage operation. At the second stage, mobilization was continued toward the hilum in the course of which there was some traction on the lung. During this procedure the patient suddenly stopped breathing and all efforts to revive him were in vain. Sauerbruch has recorded a similar experience.

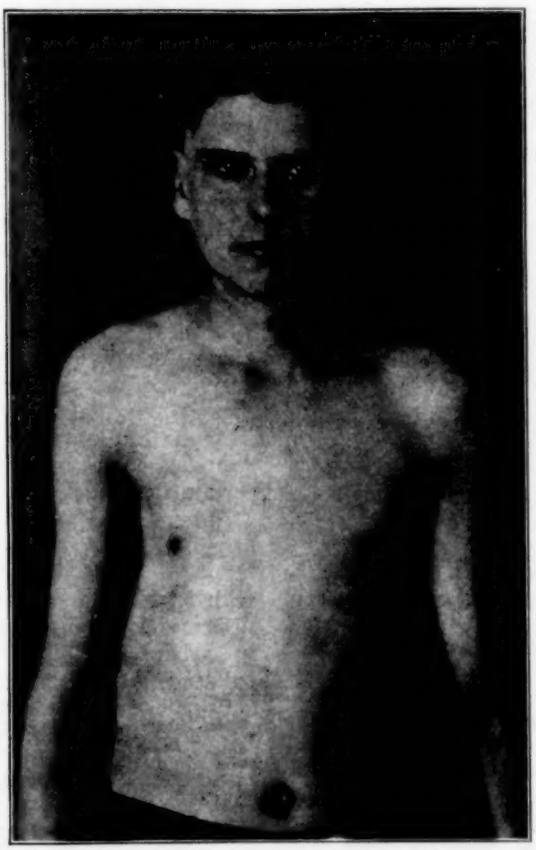


Fig. 5.—Four months after lobectomy: Patient had become symptom free and had gained 17 pounds (8 Kg.).

COMPRESSION BY UPWARD DISPLACEMENT OF THE DISEASED LUNG

Garré [39] has mobilized the lung after extensive rib resection for exposure, and sutured its edge to the chest wall at a level above the dome of the diaphragm, packing gauze into the space below. This results in marked improvement. Later he resects the diseased lobe.

CAUTERY EXTIRPATION OF THE DISEASED LOBE

Rib resection for exposure and cautery destruction of the diseased portions of the lung have been carried out by Sauerbruch, Graham and others. The risk of hemorrhage and embolus makes the operation, however, a formidable one. Sauerbruch reports nine cases with cure in one and marked improvement in five; three patients died. Lorey [42] obtained one cure. Graham [43] reports twenty cases of "chronic pulmonary suppuration" treated by cautery lobectomy. Thirty per cent of the patients were healed; 20 per cent were free from symptoms but had bronchial fistula; 15 per cent were markedly improved; in 15 per cent the records are incomplete, and 20 per cent died.

Displacing the diseased lobe through the chest wall and suturing it, allowing the projecting portion to slough away spontaneously, has been accomplished by Whittemore.[44] He reports one case cured and one greatly improved by the method. Of five patients so operated on, two are well; one is improved but still has a fistula; one died the tenth day of pneumonia of the opposite side, and one is still under treatment.

SUMMARY

1. The diagnosis of bronchiectasis based on the ordinary clinical observations has often been doubtful as to distribution and always incomplete as to the type and extent of involvement.

2. Bronchography by means of contrast mediums visualizes the presence, distribution and type of bronchial dilatation.

3. The principles of surgical treatment of bronchiectasis are drainage, compression and extirpation.

4. Drainage is the treatment of choice in single cavitations and for localized gangrenous extension.

5. The methods of pulmonary compression are artificial pneumothorax, phrenicoexeresis, extrapleural thoracoplasty and pneumolysis.

6. Artificial pneumothorax or temporary paralysis of the phrenic nerve or both are indicated as tentative procedures in early mild cases.

7. Phrenico-exeresis and graded extrapleural thoracoplasty is the treatment of choice in the cases of long standing. The usual result is marked improvement approaching a symptomatic cure. If thoracoplasty, it makes secondary drainage and extirpation safer. The operative mortality in graded thoracoplasty is relatively low.

8. Primary lobectomy and graded cautery extirpations are not to be recommended on account of the high postoperative mortality and the frequency of residual bronchial fistula.

9. Secondary lobectomy or graded cautery extirpation, when indicated, following thoracoplasty and phrenico-exeresis, should prove relatively safe and highly effective.

10. Early accurate diagnosis made possible by contrast medium roentgenography with iodized oil and prompt surgical treatment should result in a maximum proportion of cures with a minimum of risk and of sacrifice of structure and function.

ABSTRACT OF DISCUSSION

DR. HOWARD LILIENTHAL, New York: The immediate death rate following an operative procedure on the lung is not an indication of what might have happened if the patient had

42. Lorey: Operative Behandlung der Bronchiektasien, Deutsche med. Wchnschr. **50**: 728, 1918.

43. Graham, E. A.: Cautery Lobectomy for Chronic Suppuration of Lung (Report of Twenty Cases), Arch. Surg. **10**: 392 (Jan.) part 2, 1925.

44. Whittemore, Wyman: Personal communication to the author.

not been operated on. Many of these patients will die in any event. About 10 per cent will develop cancer of the lung, if they live long enough. Another 13 per cent will probably die of some form of cerebral embolism. Suppurative bronchiectasis is a condition which is absolutely desperate. In order to effect complete cure there is only one thing to do, and that is extirpation, provided the case is a suitable one as to distribution. There has been a fear of the operation of lobectomy on the part of even the boldest thoracic surgeons, and the operation has, unfortunately, fallen into disuse. This is not fair. Of thirty-four cases of lobectomy, with sometimes one lobe, sometimes two lobes or even an entire right lung removed, seven patients, or 20 per cent, are well; that is, they are perfectly well, so that normal vital capacity is shown by spirometer. In one case—my first, by the way—the young man has developed his other lung and his other lobes to such an extent that he even exceeds the normal in vital capacity. I believe that according to the old technic that I used, which is not, perhaps, the best, there is a direct mortality of 40 per cent in the case of the extirpation of a single lobe—probably little, if any, higher than is indicated by late results after palliation operations.

The employment of lobectomy is not always advisable for cases of extensive disease involving more than one lobe, certainly not when both lungs are diseased; but in carefully selected cases you will get a more nearly normal person after lobectomy than is the case following palliative operations. I am glad to see that experiments on animals are being made, and that operations, lobectomy and lobe destruction by cautery, are being performed on human beings which, I believe, will lead to a much lower death rate than in the past. Very rarely do we find a single type of lung suppuration, abscess often occurring with bronchiectasis. With reference to the cases of bronchiectasis that Dr. Hedblom presented, if they existed for more than a few months, complications doubtless were present. This means that we must study each case carefully and decide on what should be done only at the time of the operation rather than before the operation. Never shall we be able to standardize an operation in cases of suppuration of the lung. Everything depends on the surgeon, his experience, and his skill.

DR. CARL A. HEDBLOM, Chicago: While it is true that the life expectancy in these cases of bronchiectasis is less than that of normal persons, patients on whom I have operated, except as detailed, are all living at the present time, some of them many years after the operation was performed. While it also is true that there is an extension of fibrosis into the peribronchial tissues, the fact remains that in cases of what I have ventured to call uncomplicated bronchiectasis the roentgen-ray examination shows nothing. There are many cases—I have observed quite a few—in which the patient has raised from 500 to 1,000 cc. of pus in twenty-four hours, and the combined efforts of clinician and roentgenologists have failed to decide with certainty whether the pus was coming from one side, or both. By "uncomplicated bronchiectasis" I mean the type of case in which the roentgenogram is practically negative, and that is, at least, a practical distinction that one can make clinically. It is true that in the pathologic examinaion of such cases one finds a certain amount of thickening and fibrosis around the bronchi, but they are not cases of secondary involvement of the parenchyma of the lung. That, to my mind, is a very important point. I would not advise a thoracoplasty or a collapse operation of any kind for patients who have evidence of secondary abscess of the lung. That evidence consists, first of all, in a mottled shadow and in the symptoms of fever, leukocytosis, foul sputum, loss of weight, and other indications of the extension into the lung parenchyma. In such cases, I think that the graded cautery destruction or lobectomy is the operation of choice, provided the patient is in condition to stand it. I quite agree that the treatment of these cases cannot be standardized beyond a certain point, but I do feel that when we are able to make the diagnosis early (and I believe that we shall be able to do that, with the assistance of iodized oil), a trial of the collapse operation should be made before more radical procedures are resorted to.

ACUTE CIRCUMSCRIBED EDEMA (QUINCKE)*

H. H. DRYSDALE, M.D.
CLEVELAND

Angioneurotic edema is an extremely interesting problem—interesting not only because of the strange behavior of its manifestations but from the fact that its etiology remains inexplicable. Three forms of the condition have been recognized: (*a*) Charcot's edema; (*b*) Sydenham's edema, and (*c*) Quincke's circumscribed edema.

True circumscribed edema corresponds to the angioneurotic edema of Quincke, and it is this phase of the disorder that constitutes the subject of my thesis.

The disease has been known to the profession for almost 200 years, but not until 1882, when Quincke[1] published his interpretation of the symptoms, did it attract general attention. Since then a considerable number of cases have been reported in the literature under such titles as acute circumscribed edema, wandering edema, giant urticaria, hydrops hypostrophos, noninflammatory edema and chronic neuropathic edema. Innumerable theories have also been advanced to account for this mysterious symptom complex, but so far our conception of its origin continues to be a matter of conjecture.

Some observers entertain the impression that circumscribed edema is in no wise a disease entity but merely a symptom of an anaphylactic disturbance. To maintain their position they refer to the similarity that exists between angioneurotic edema and such anaphylactic reactions as asthma, hay-fever, nasal hydrorrhea and certain bronchitic conditions.

Others interpret the condition as an expression of protein sensitization, but this assumption has not yet been proved. The fact that many people are born with a rebellious idiosyncrasy to certain foods is not sufficient to justify this claim.

Barber[2] of Guy's hospital (London), after a careful study of five cases, is inclined to believe that in the majority of patients in whom chronic urticaria, with or without angioneurotic symptoms, appears for the first time in adult life, the outstanding cause is sensitization to bacterial rather than to food proteins. He has observed two cases in which the teeth were apparently the main source of infection and in which recovery followed the extraction of septic roots and the treatment of pyorrhea. Another of his cases was associated with suppuration of the left antrum and frontal sinus. Two operations were necessary to eradicate the infective process, and five days thereafter the edema completely subsided. In still another case, complicated by rheumatic fever, there was a full recovery after enucleation of the tonsils. In his opinion, *Streptococcus longus* is the chief offending micro-organism. Haldin Davis[3] is also convinced that "hidden sepsis is the most likely etiologic factor" of chronic urticaria, and urticaria in its behavior and development is closely allied to circumscribed edema. Oberndorf[4] has reported a case of angioneurotic edema which entirely disappeared after the removal of an acutely inflamed appendix.

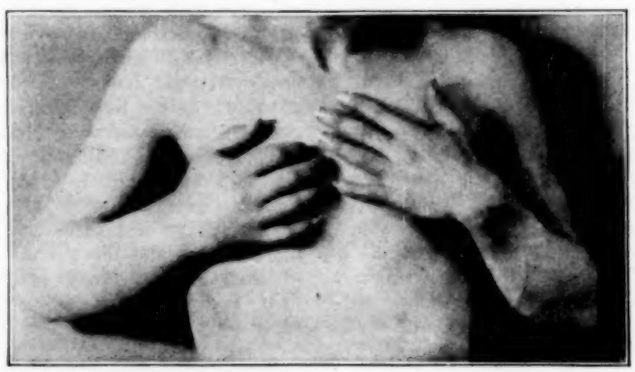
* Read before the Section on Nervous and Mental Diseases at the Seventy-Eighth Annual Session of the American Medical Association, Washington, D. C., May 20, 1927.

1. Quincke: Monatschr. f. prakt. Dermat., July, 1882.
2. Barber, H. W.: Guy's Hosp. Rep. **81**: 385, 1923.
3. Davis, Haldin: Guy's Hosp. Rep. **81**: 385, 1923.
4. Oberndorf, C. P.: Disappearance of Angioneurotic Edema After Appendectomy, J. A. M. A. **59**: 623 (Aug. 24) 1912.

Staffleri [5] is responsible for the theory that acute circumscribed edema is due to the exaggerated excitability of certain nerves which control the circulation of lymph, and that the hyperexcitability is caused by defective endocrine function with thyroid insufficiency predominating. He secured favorable results with thyroid treatment, and for the relief of the attack recommends atropine and a saline purge.

Most authors are agreed that the majority of individuals who develop circumscribed swellings of the subcutaneous or submucous structures are neuropathically blighted. This constitutional instability or inferiority manifests itself in antecedent or associated neuroses and psychoses in the family or in the patient. Osler [6] has reported a series of twenty cases extending through four generations of a certain family, and Milroy [7] published the history of twenty-two cases running through six generations of another family. Unfortunately, in neither of these instances was it possible to determine from which parent the disease was most frequently transmitted.

Other influences also play some part in the etiology of trophic skin lesions. Intestinal disturbances, infectious diseases, menstruation, puberty, climateric, toxic agents such as alcohol and tobacco, emotional uprisings and trauma probably operate as precipitating or exciting factors. In any event, they appear with considerable prominence in a large number of cases.



Acute circumscribed edema (Quincke). The condition at first was confined to the right hand and fingers. April, 1927, the right forearm became involved.

In former years it was not unusual for general practitioners to classify angioneurotic edema as a manifestation of hysteria. They seemed to confuse it with Sydenham's edema, which, however, bears slight resemblance to the acute circumscribed edema of Quincke, except that in both there is infiltration of the subcutaneous tissues. When it does occur, it usually is superimposed on some unmistakable hysterical stigmas; i. e., regional paralysis, regional contractures, regional anesthesia, analgesia or hyperesthesia. Furthermore, the areas involved generally correspond with the natural divisions of the body, such as an arm or a leg. In not one of Osler's cases did hysteria coexist. The majority of clinicians who have encountered localized edemas in hysterical subjects do not hesitate to regard them as accidental complications—injuries which the individual inflicted purposely.

According to reliable statistics on the subject, angioneurotic edema of the circumscribed type generally affects young people, men more commonly than women. As a rule, it occurs in the form of paroxysmal attacks of circumscribed elevations of almost any part of the body, including the mucous membranes. The lips, eyelids, hands and forearms are perhaps the most favored locations, but the tongue, pharynx, glottis, uvula, conjunctiva, gastro-intestinal tract, scrotum and even the periosteum may become involved. It has also been known to invade the larynx following tonsillectomy. The edematous areas vary greatly in size. In some cases they are simply small wheals, while in others they may and sometimes do attain huge proportions. They invariably arise suddenly and without warning and reach their maximum within an hour or two. The swellings are usually sharply defined, rarely pit on pressure, and are white in appearance. The subjective phenomenon consists only of a feeling of tightness or tension. There is scarcely ever fever.

The general health of the patient is not ordinarily disturbed, but edema of the mucous membranes may incite troublesome and serious complications, such as nausea, vomiting, colic and even diarrhea. Harrington [8] has described instances of severe "abdominal crises" of this character. An exploratory incision was made which disclosed a local edema of the small intestine. Edema of the glottis is rather rare but it has caused death in a few cases. Quincke is inclined to ascribe certain forms of serous meningitis to acute circumscribed edema of the brain. Foster Kennedy [9] has related three cases of brain swelling in angioneurotic edema, and in one of his patients protein sensitization tests proved her susceptible to milk. Schlesinger [10] believes that acute relapsing edema of the eyelids, acute relapsing exophthalmos, and kindred paroxysmal difficulties also belong to this condition. If this is true it is possible that Ménière's disease is due to similar processes in the labyrinth.

REPORT OF CASE

The case I am privileged to report presents several very interesting aspects. It concerns a workman who was referred to me, July 30, 1925, by an industrial surgeon. According to his history, he had received a blow on the dorsum of the first and second right fingers, Dec. 12, 1924, when employed as a filer in plant B of the United States Aluminum Company, Cleveland. The injuries were regarded as superficial scratches. The skin, however, was broken. Antiseptic dressings were applied daily, but a moderate degree of infection developed. At least, there was some redness of the tissues surrounding the wounds for a period of about eight days. Then the condition completely cleared up, leaving no scars. Two weeks after the mishap it was noted that the fingers of the right hand were swollen or puffed, and soon thereafter the disturbance invaded the right hand and wrist. Jan. 3, 1925, a roentgen-ray investigation was made, but this did not disclose any injury to the bones or joints of the affected region. Diathermy was resorted to, and after a few treatments the edema began to subside but never fully disappeared. March 12, the patient was examined by a prominent orthopedist, who did not find ankylosis of the joints of the right hand and fingers or evidence of arthritis or osteomyelitis. He interpreted the disability as a trophic neurosis and recommended splinting combined with physical therapy. It was also his opinion that if these methods did not prove helpful in a reasonable space of time, the advisability of performing Leriche's operation of arterial sympathectomy should be considered.

5. Staffleri: Rev. méd. del Rosario. **9**: 293, 1919.
6. Osler, William; and McCrae, Thomas: Modern Medicine, Philadelphia, Lea & Febiger, **6**: 649, 1909.
7. Milroy, in Modern Medicine **6**: 650, 1909.
8. Harrington, in Oppenheim: Nervous and Mental Diseases, Chicago, Chicago Medical Book Company **2**: 1923, 1911.
9. Kennedy, Foster: Cerebral Symptoms Induced by Angioneurotic Edema, Arch. Neurol. & Psychiat. **15**: 28 (Jan.) 1926.
10. Schlesinger: München. med. Wchnschr., 1899, number 35.

I found the patient to be a man, aged 23, and unmarried. He is a native of Ohio and his forebears are Polish. He has three brothers and one sister, all of whom have reached maturity and are healthy and robust. His parents are also living and well. So far as he is aware there has been no delinquency, alcoholism, or nervous and mental blight in the family record. The patient has always been robust, industrious and without evil tendencies. His habits are temperate. He stated that he had never contracted a social disease. I am informed that his birth was a perfectly normal affair, and he has never been subject to convulsive insults. With the exception of a moderate attack of diphtheria in early life, his health has been good. As a boy he was accused of bashfulness and reticence, but he nevertheless enjoyed the companionship of other children and took an active part in their pastimes. Adolescence was uneventful. At the age of 7 he started to school and progressed satisfactorily. At least, he kept within the normal average by passing his examinations each year. He did not excel, however, in any particular study nor did he become especially skilful in any form of play. When he reached the seventh grade he stopped attending school and went to work in order to assist in maintaining the family budget. At first he was employed in the shipping department of a large tool company and, remained two years. Then he accepted employment as a filer with the U. S. Aluminum Company, where he worked during the subsequent five years. He never missed a day except when work was slack, and his earnings averaged about $30 weekly. Never before had he been injured.

Examination showed the patient to be somewhat undersized but well developed and adequately nourished. His heart was normal in size and position and regular in outline, with a pulse rate of 88. The systolic blood pressure was 120, and the diastolic 90. Both lungs were clear: respiration was free and unembarrassed. The abdomen presented nothing noteworthy. He walked alertly and correctly, and no incoordinate movements were noted. The spinal column was in correct alinement and freely flexible. All reflexes (deep and superficial) were sharp, but sensation was well preserved in all of its qualities over the entire body surface. Diplopia, nystagmus, dysarthria, clonus, ataxia or the Babinski toe response were not present. The pupils were moderately dilated but regular in outline. Both reacted promptly to light and distance. The ophthalmoscope did not disclose any abnormalities in the eyegrounds. Hearing and vision were normal for all ordinary purposes. The functions of the spinal cord were intact.

Inspection of the alleged disability showed marked infiltration of the skin and subcutaneous tissues of the right hand and fingers, but it did not extend beyond the wrist. The edema was circumscribed, white in appearance, did not pit on pressure and was neither tender nor painful. It did, however, greatly interfere with the grasp of the hand and the finer movements of the fingers. The temperature of the affected area was not altered. By actual measurement the right hand was 1 inch (2.5 cm.) larger in circumference than the left.

The thyroid gland was moderately enlarged but, during my long observation of the case, no tremors, tachycardia, exophthalmos, flushing of the chest, Graefe's or Stellwag's phenomena, or other manifestations indicative of disturbed thyroid function were detected. The chemical reactions of the blood, the calcium content, kidney function and basal metabolism were normal. The spinal fluid gave a negative Wassermann reaction without increase of cell count. Food tests failed to disclose any especial susceptibility.

On the psychic side, the patient was extremely ill at ease, unduly emotional and morbidly impressionable. He seemed to chafe under his disability and complained of sleeping poorly. Fears haunted him continuously.

Faradism was applied to the right hand and arm, twice weekly, and a sedative administered each night. Within a month the condition improved to an extent of fully 75 per cent. The movements of the right hand and fingers became quite free, and I was convinced that his recovery would not be long postponed. One week later he struck his hand against a door knob, and to my astonishment the edema returned almost immediately.

Aug. 31, 1926, a roentgen-ray investigation was made by Dr. John G. Osmund at Charity Hospital. He reported that the osseous structures of the right hand, right fingers and right arm were found to be perfectly normal, and that there were no indications of arthritis, periostitis or osteomyelitis.

Thyroid medication was prescribed and again the condition displayed signs of abatement, but the moment any reference was made regarding his return to work some disturbing experience or emotional upset would arise and precipitate a recurrence of the edema. One day he lost some money, and at another time he had a dispute with a relative. He seemed to be habitually in trouble, always had a grievance and seldom was at peace with himself.

Administration of atropine, epinephrine residue, pituitary extract, calcium lactate and hypertonic saline solution, restriction of fluids, and diet regulation were also given a fair and prolonged trial with the same incomplete and unsatisfactory results.

During September, 1926, it became plainly evident that this young man's personality was undergoing a decided change. Little defects of memory were noted, and his emotionalism had increased. On several occasions he related incidents of the most impossible and fantastic character, and for a while he entertained morbid suspicions, if not delusions, of persecution.

Jan. 5, 1927, sodium cacodylate was administered, as the patient's appetite was poor and he had lost a little in weight. February 19, his health was found to be greatly improved both physically and mentally. The edema had receded and he could use his right hand and fingers much better than at any time since the accident. The company by which he had been employed then denied him further compensation. It took the position that the inconsequential wounds he had sustained were not sufficient to account for his prolonged physical incapacity.

To meet this situation I frankly informed the patient that it was now up to him to assert himself; that his disability was largely the result of constitutional nervousness, and that he should engage at once in some useful pursuit in order to divert his thoughts into more wholesome channels. His employer at my suggestion agreed to permit him to return to the plant and to do such light work as he could with his left hand. This he reluctantly promised to do and reported for duty, April 11.

Three days afterward he unexpectedly appeared at my office in a most agitated frame of mind and complained bitterly of the unkind reception he had received from fellow workmen. He could not work, he declared, and showed me his right hand, which was so deeply swollen that it resembled a white boxing glove. The edema had now extended into the right forearm. He was directed to persist at his work, which he has done. When I last examined him (May 2), I noticed for the first time a tendency to pitting over the knuckles of the right hand. Otherwise, the condition was unchanged.

CONCLUSIONS

1. The fact that this young man was apparently in normal health when he was injured, and that infection did actually develop in the wounds, may encourage some seriously to regard trauma and sepsis as the probable causes of his disability. On the other hand, industrial accidents are practically universal. In many of them serious infections arise, and yet it is a rare occurrence for circumscribed edema to appear as a complication. Furthermore, if "hidden sepsis" is guilty of precipitating the anomaly, where is the dwelling place of the offending organisms? Then, again, if this case is an example of bacterial sensitization, would it not be reasonable to expect the individual to acquire a certain degree of immunity within eighteen months? Unfortunately, the patient refused to permit the injection of autogenous vaccines.

2. It is not always an easy task to classify properly the various vasomotor symptom-complexes, as they frequently occur in mixed or transitional forms. In this instance considerable confusion arose from the fact

that the edema developed in connection with a minor injury and was aggravated by emotional irritations. Hysteria was finally excluded when none of its classic manifestations came into the picture.

3. From the very beginning of his invalidism, this patient deliberately fostered and encouraged a state of mental inertia and brooded constantly over the uncertainty of obtaining a substantial reward. Everything possible was done to change his morbid mental attitude but the obsession of permanent helplessness was overpowering. I am therefore convinced that his condition is simply an expression of his mental instability, and in my judgment trauma had very little, if any, part in its etiology.

Finally, I should add that unless all signs fail, the disability will retain its chronicity until a settlement has been made, but when that time comes a complete recovery may be expected.

Rose Building.

ABSTRACT OF DISCUSSION

DR. PETER BASSOE, Chicago: This condition occurs most frequently in persons who show signs of other angioneuroses, such as migraine. The Norwegian pathologist Harbitz reported several cases occurring in one family, with involvement of the glottis. In about 1911 I saw a man with the general symptoms of brain tumor. He had headache, vomiting and choking of the disks, but no localizing symptoms. A decompressive operation was performed. He made a complete recovery for the time being and went out West. A year or two later I received a letter from a physician telling me that the man had come to him with cutaneous swellings, and he thought it was a case of angioneurotic edema. A couple of years ago he came to one of the Chicago hospitals. Dr. Hall saw him, and found typical angioneurotic edema. This was a case in which apparently the brain had been first affected and it was several years before the ordinary, superficial aspects of the disease appeared. I think that in at least one case of this condition I have injected the fifth nerve for supposed neuralgia. I am inclined to think that certain patients who have sick headache for many years and then develop various abdominal complexes really have angioneurotic edema. I saw a case of that type a while ago in a woman who had had four or five laparotomies, and the painful attacks went on exactly the same, constituting, probably, so-called abdominal migraine. I hope Dr. Drysdale will enlighten us if he knows of any treatment that is generally applicable.

DR. THEODORE T. STONE, Chicago: For the past five years I have been associated with a large steel company in the vicinity of Chicago, where from 2,800 to 3,300 men are employed. There occur daily probably forty or fifty accidents, some severe and some mild. The majority, however, are very mild and consist essentially of injuries to the hands and upper extremities. During that entire time very little infection has resulted and I have seen conditions similar to the one Dr. Drysdale described. I have always felt that this condition primarily, when located only in the hand, was due to the original injury, and I have always tried to explain it on the basis that it was an extravasation from the tendon sheaths or the structures directly associated at the site of the injury. Although these patients complain of pain, very few of them have stayed away from work and the condition tends to remain for from one to six months, the swelling gradually and periodically increasing, then decreasing, and then ultimately curing itself. I have always thought that it was a local condition and that probably some disturbance or injury was produced in that location which caused an extravasation of fluid.

DR. GEORGE W. HALL, Chicago: In reference to the case which Dr. Bassoe spoke about, I saw the man twelve years after he had a decompression done. At that time he had a swelling of one leg; the skin was very shiny and tight in appearance. He had to be put to bed for many days and treated by elevating the leg in order to give him relief. It was finally decided to remove many of his teeth, which were badly abscessed. That was done three or four years ago and since then he has been perfectly normal, as far as we know; that is, he has not had a recurrence of the attack.

DR. HARRY ALTON SCHACHTER, Newark, N. J.: I am reasonably sure that Dr. Drysdale and Dr. Bassoe are correct in assuming that in many of these cases, if not in all, there is a definite constitutional predisposition to this condition of so-called angioneurotic edema. I have not observed a definitely circumscribed edema of a certain part which recurs in that part only, but I did see a young ex-service man at the United States Veterans' Bureau in Newark who had worked with high explosives during the war, trinitrotoluene and trinitrophenol chiefly, and who became intoxicated from contact with them. On examination two years after he contracted the condition, he presented a marked flushing of the entire surface of the body, with dilatation of all the peripheral capillaries; there was distinct redness of the skin of the body from the scalp to his toes, and when I first saw him he had a marked edema of the upper lip. On several occasions subsequently he had edema of various parts of his body, which subsided as spontaneously as it apparently arose. I do not believe that Dr. Drysdale, though he deferred to toxic causes, mentioned the specific action of nitrates in the production of angioneurotic edema. This man was the only individual, as well as I could determine, of several thousand who had worked at that particular plant who contracted this peculiar condition, and so we must look to some other cause for an explanation of it. Surely there must have been many others who were as fully exposed to the poisonous action of these nitrates as he was.

DR. H. H. DRYSDALE, Cleveland: The etiology of Quincke's circumscribed edema remains unsolved. The fact, however, that most cases develop in neuropathically or psychopathically tainted persons encourages the conviction that an inherited weakness or susceptibility is probably an important causative factor. The case described by Dr. Schachter was apparently an instance of the Sydenham type of the disorder. This complication was not infrequently encountered in World War veterans suffering from psychoneuroses incident to shell fright. The edema invariably developed in connection with emotional crises and pursued a rather rebellious and chronic course. When these patients regained their mental poise and control, the edematous areas entirely disappeared. Replying to Dr. Bassoe, I might say that so long as the origin of these trophic disturbances continues to be a matter of conjecture, a specific therapy is out of the question. A great many remedial agents were given a prolonged trial, but none of them afforded any lasting relief. In the case I presented, the element of compensation undoubtedly operated as a deterrent to the patient's recovery, by keeping him agitated and upset. When the matter is finally settled, I shall be greatly surprised if he does not promptly regain the full use of his hand and arm.

Medical Etiquette.—With the laity, often ignorant perhaps, and also among those who ought to know better, medical etiquette is frequently derided and abused. Medical etiquette embodies what is right and is just the use and wont of what has been the ideal conduct of generations of high minded doctors. No one wants to overstrain things, but medical etiquette is just the doctrine of doing as you would be done by translated into certain rules of conduct and professional usage. Follow after them and you will not stray far from the narrow way of professional virtue. In most cases if the men themselves are not impossible, and the matter at issue is not beyond mending, the wisest thing is to meet and talk it quietly over, or refer the question to the judgment of a common friend. We don't see enough of one another apart from unavoidable professional intercourse. Go to medical society gatherings, cultivate your colleagues—most of them at the bottom are quite good fellows—learn from them, make friends with them, for men "do truly exist for one another," "teach them, or at least bear with them."—Skirving, R. S.: Address to Undergraduates, *Sydney University M. J.*, June, 1927.

HEMOLYTIC STREPTOCOCCUS CARRIERS

THEIR RELATION TO THE SPREAD OF SCARLET FEVER *

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AND
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Recent studies on the etiology of scarlet fever have directed attention to the question of convalescent and normal carriers of hemolytic streptococci as a possible source of infection. Although no special work along these lines has been undertaken in this laboratory, the toxin production of a number of strains of hemolytic streptococci, isolated from carriers, has been studied, and the results obtained during the past two years have seemed of sufficient interest to report.

Strains of hemolytic streptococci from eight persons who had recovered from or were convalescing from typical scarlet fever have been studied. These strains were isolated from throat cultures taken from thirty days to six months after the onset of the disease. Six of the persons were apparently healthy. One was still convalescent after forty days, while the eighth had recovered from scarlet fever but was ill with influenza at the time the culture was taken.

According to intracutaneous tests on goats, of these eight strains, five, isolated from forty days to six months after the onset of the disease, produced potent toxins neutralized by our standard scarlet fever antistreptococcus goat serum (Dochez). Broth filtrates of the other three strains, isolated from thirty days to three months after the onset of the disease, induced reactions only in very low dilutions. These toxins were not completely neutralized by the serum.

In the case of six of these convalescent carriers, no evidence could be obtained that they were the source of infection for any other cases of scarlet fever. The histories of the other two carriers, however, are of special interest since there is a definite indication that other persons developed scarlet fever as a result of contact with them.

REPORT OF CASES

Case 1.—C. G., a girl, aged 7 years, was admitted to the hospital, May 20, 1925, with a typical case of scarlet fever. At the same time a younger sister, S., had a slight sore throat and fever lasting about twenty-four hours. There was no evidence of a rash, but some time later desquamation was noted on the palm of the hand and on the fingers. While the patient was in the hospital no other cases of scarlet fever occurred in the household, but on June 23, about five days after her return, H. W., aged 4½ years, a young cousin who was visiting the family, became ill with scarlet fever and was taken to the hospital. About July 20, W. G., an older brother of the patient, also developed the disease, and the youngest child, a boy a year and a half old, had a slight sore throat but no rash.

Throat cultures were taken from the patient when she was first admitted to the hospital, May 20, and again on June 23 and on July 21, when H. W. and W. G. developed scarlet fever. All three of these cultures yielded hemolytic streptococci which produced potent toxins neutralized by scarlet fever antistreptococcus serum. Hemolytic streptococci were also isolated from throat cultures taken from H. W., June 23, and from W. G., July 20, and according to the toxicity tests, both of these strains were similar to those isolated from the patient.

In this connection it is of interest to note that the patient had had an attack of tonsillitis about April 1, 1925, two months before she developed scarlet fever, and that a nontoxic strain of hemolytic streptococci was isolated from a throat culture taken at this time.

There was no evidence of any post-scarlet infections in any of these cases, but in November, 1926, over a year later, W. G. had a middle-ear infection, and a hemolytic streptococcus producing toxin neutralized by scarlet fever antistreptococcus serum was isolated from the discharge.

Case 2.—L. H., a boy, aged 10 years, developed scarlet fever, Sept. 24, 1925. He had a moderately severe case and there was considerable discharge in the nasopharynx. Six weeks after the onset of the disease, his tonsils and adenoids were removed and two weeks later he returned to school apparently perfectly healthy. Shortly after this, three cases of scarlet fever occurred in the same grade and a young cousin also developed the disease. December 15, an examination of the nose and throat of the patient revealed mucopus discharging into the pharynx and hemolytic streptococci were isolated from the nasopharyngeal culture taken at this time.

According to the intracutaneous test on goats, this strain produced a toxin of very low potency which was not completely neutralized by the scarlet fever antistreptococcus serum. No cultures were submitted from the children who developed scarlet fever apparently as a result of contact with this carrier. It is of interest to note, however, that strains corresponding to that isolated from the patient had previously been recovered from patients with typical cases of scarlet fever in the same locality.

From December 24 to December 26, the patient visited relatives in a nearby city and about January 1 a young child in this family was taken ill with scarlet fever. Throat cultures were again taken from the patient, January 2, but no hemolytic streptococci were isolated at this time.

One instance has also been observed of a case of scarlet fever apparently due to a normal carrier of hemolytic streptococci.

Case 3.[1]—On June 18, 1925, L. S., a man about 40 years of age who had been in the hospital for seven months suffering from a gunshot wound in the leg, became critically ill with what was diagnosed as probably erysipelas. Since, however, there was a profuse generalized rash over the entire body resembling that of scarlet fever, it was decided to make an intracutaneous blanching test with scarlet fever antistreptococcus serum. Eight hours later there was evidence of local blanching of the rash at the site of injection of the serum. The patient was extremely toxic and the prognosis at this time was considered very unfavorable. A therapeutic dose of 60 cc., or a total of approximately 2,400 units of the scarlet fever antistreptococcus serum was therefore administered, 20 cc. being given intravenously, the remaining 40 cc. intramuscularly. Within twelve hours there was a complete disappearance of the toxic symptoms and fading of the rash. Although the patient's general condition remained satisfactory, the wound infection persisted and some days later there was a recurrence of the local erysipeloid condition. This continued to spread, septicemia developed, and about two weeks later, July 5, the patient died.

Hemolytic streptococci were isolated from cultures taken from the wound on June 18, from throat cultures taken on June 22, four days after serum had been given, and from blood cultures taken a few days before death. The strain from the throat, S 190, was found to be nontoxic in the dilutions tested. Strains S 189 and S 192, from the wound and from the blood, both produced toxins which, according to the tests on goats, were not completely neutralized by scarlet fever antistreptococcus serum.

When an investigation was made of the possible sources of infection, it was found that, about one week previous to the onset of the disease, the patient had visited his two children in a local orphanage. A number of cases of scarlet fever had occurred in this institution during the preceding winter and spring, the last case in April about the time these children had been admitted. At the time of admission both children had been tested for susceptibility to scarlet fever and both had failed to react to the toxin.

* From the Division of Laboratories and Research, New York State Department of Health.

1. We are indebted to Dr. C. F. Graham and Dr. C. K. Winne of Albany for the history of this case.

June 20, throat cultures were taken from both children, and from the daughter's culture hemolytic streptococci were isolated. Tests were then made to determine the relationship of this strain, N 179, to strains S 189 and S 192 isolated from the father. According to the intracutaneous tests on goats, strain N 179 produced a toxin neutralized by scarlet fever antistreptococcus serum, while the toxins produced by strains S 189 and S 192 were not completely neutralized. Since, under the conditions of this test, the results with these three toxins did not entirely correspond, further tests were made with strains N 179 and S 189 on human subjects susceptible to the standard scarlet fever streptococcus toxin. In this test the results with the two strains corresponded exactly. On one person, both toxins in a 1:500 dilution induced definite skin reactions and neither toxin was neutralized by a dose of scarlet fever antistreptococcus serum sufficient to neutralize five skin test doses of the standard toxin. A second person gave only very questionable reactions either to the toxins alone or to the toxin-antitoxin mixture.

The fact that, according to the intracutaneous tests on goats and persons, the toxins produced by the strains isolated from the parent were not completely neutralized by the standard scarlet fever antistreptococcus serum is of especial interest in view of the fact that the rash was blanched by the serum and that there was such a marked improvement following the administration of the therapeutic dose.

SUMMARY

Hemolytic streptococci producing potent toxins have been isolated from patients after recovery from typical scarlet fever, from thirty days to six months after the onset of the disease.

Evidence has been obtained that occasionally typical cases of scarlet fever may occur as a result of contact with such convalescent carriers or with normal carriers.

FRIEDREICH'S ATAXIA IN TEN MEMBERS OF A FAMILY*

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Friedreich's ataxia may be defined as a familial disease manifesting itself at any age during childhood, characterized by imperfect muscular coordination, speech disturbance, and a variety of symptoms and signs varying with different cases. Anatomically, it is characterized by a defective development of the spinal cord. While the disease itself is not rare, the ten cases that I present occurred in one family and constitute, I believe, one of the largest series yet reported.

Direct inheritance is not the rule. This is shown not only by the series of cases on which this report is based but also in those mentioned by others, notably Sachs and Oppenheim. A study of these cases seems to indicate that the percentage of diseased individuals in a family increases with each generation. In the first generation of this series four cases were observed, while in the second generation six cases have so far developed. This is only a natural consequence.

The occurrence of isolated cases has been recorded in the literature with frequency, although the tendency for multiple cases to occur in a family is striking. Gowers reported sixty-five cases occurring in nineteen families, an average of rather more than three cases to a family.

The ages of the patients in the present series vary from 5 to 42 years, and the sexes are about equally divided: six males and four females. Eight are still alive; one died last year at the age of 40 years, and one at the age of 30, but before this study was begun. It is interesting to note that each of these ten patients developed gross manifestations of the disease at the same age. In each case the involvement was obvious at 12 years. In addition, certain prodromal symptoms were observed which seem never to have been described. In collecting the data in these cases, I saw eighty-four blood relatives. When the disease has been present for such a long time in a family, from one to thirty years in this series, the parents become very observant in noting the slight abnormalities that the children show before they are actually diseased. It was learned from these observations that in practically every case from late infancy through early and late childhood a certain nervous instability was noted in those who later became affected. This instability varied from infantile convulsions to headache, or from easy fatigue to excessive nervousness on up to 12 years, when the signs became more manifest. Syphilis did not seem to play a part in the production of the disease. Blood Wassermann tests, done on the patients, as well as on the parents and on a number of the relatives, were negative. Nor was there evidence of toxicopathic taints in the parents or the grandparents. Consanguinity of the parents occurred in certain cases. There was no history of epilepsy or psychosis in the relatives.

None of the patients have died since this study was begun, and I shall therefore not give any time to a consideration of the pathologic anatomy of the disease. The urine in all cases was normal. Examination of the stools showed hookworm infestation present in two cases; *Taenia nana* infestation was present in one case. These observations were regarded as incidental. An examination of the blood did not show any abnormality except for a secondary anemia and a marked eosinophilia in those cases in which intestinal parasites were present. Basal metabolic tests varied from minus three to plus seven (normal limits). The Wassermann reactions of the spinal fluids were uniformly negative. The cell counts were not increased, and the gold reactions were negative. The globulins were not increased. In some cases, lumbar puncture was impossible on account of the marked scoliosis.

REPORT OF CASES

In the case reports, so far as is practical, only the positive observations will be noted.

CASE 1.—A small, anemic, undernourished girl, aged 5 years, was of normal birth and walked and talked at the usual age. Her mother said that she had always been a nervous child and seemed to tire more easily than her normal playmates. She had never had infantile convulsions and had never been seriously ill. She is mentally bright and attends kindergarten with the neighborhood children. With the exception of the undernutrition and anemia (hemoglobin 68 per cent; red blood cells, 4,000,000), the general physical examination was negative. A complete neurologic examination showed that the knee jerks and the achilles jerks were absent even on reinforcement. There was a pronounced high arching of the right foot; the left foot was normal.

CASE 2.—A boy, aged 11 years, a brother to patient 1, was of normal birth and walked and talked at the usual age. There was no history of infantile convulsions, but he had been subject to frequent headaches for many years. He had whooping cough at 3 years of age and measles at 7, with a normal con-

* Read before the Section on Nervous and Mental Diseases at the Seventy-Eighth Annual Session of the American Medical Association, Washington, D. C., May 20, 1927.

valescence from both diseases. A general physical examination was essentially negative, with the exception of malformation of the ears. At the neurologic examination it was noted that the gait was rather awkward and when the patient's eyes were closed it became quite ataxic. The knee jerks and achilles jerks were absent even on reinforcement. Pes cavus was present, but there was no hyperextension of the great toe. The speech was definitely scanning in type, but there was no mental defect.

CASE 3.—A boy, aged 14 years, a brother to patients 1 and 2, was of normal birth and walked and talked at the usual age. When a child he was subject to attacks of holding his breath, to the great alarm of his parents. He had had whooping cough at 6 years, and measles at 8 years, and had been operated on for congenital hernia at 9 years. He made a normal convalescence from each condition. When he was about 10 years old, the mother noted that he was becoming very nervous, was complaining of frequent headache, and was losing flesh rather rapidly. Between the ages of 11 and 12 he developed the awkward gait which has become progressively worse. At the age of 13, the speech became slow and slightly scanning. Physical examination was negative, except for malformation of the ear lobes and a right herniotomy scar. Neurologic examination showed the following positive conditions: The right pupil was larger than the left; otherwise there was no cranial nerve disturbance. There was an absence of pigment in the left iris. On the finger to nose test there was slight ataxia with the eyes closed. The gait was quite ataxic, with a tendency to come down rather hard on the heels. With the eyes closed, this ataxia became more marked. Romberg's sign was present. There seemed to be a generalized wasting of all muscles, with especially marked atrophy of the supraspinalis muscles and the muscles below the knees in both legs. The knee jerks were absent even on reinforcement, and the achilles jerks only on reinforcement. There was a tendency toward winging of the scapulae on both sides. Joint sense was disturbed in the toes of both feet, but was normal in the fingers. There was considerable arching of the right foot, the left foot being normal. The speech was slow and scanning, the boy was slow in comprehension and was unable to subtract 7 from 100. There was no memory disturbance.

CASE 4.—A girl, aged 17 years, a sister of these patients, had been born normally at full term, and with the exception of an attack of whooping cough at 7 years had seemed to be perfectly well in all respects until the beginning of the present illness. Her present disability dated from an attack of measles at the age of 11 when, during convalescence, she had had difficulty in walking. On physical examination it was noted that the patient had icthyosis, which the mother dated back many years. The examination of the heart showed congenital pulmonary stenosis. Neurologic examination showed the left pupil slightly larger than the right, and a slight ptosis of the right upper lid. Fundus examination showed deep physiologic cups with considerable pallor but otherwise normal. Other cranial nerve disturbances were not noted.

There was an irregular tremor of the head when held erect which increased with purposeful movements. There was also considerable tremor about the mouth in retracting the angles of the mouth. On extension of the hands there was ulnar deviation with hyperextension at the metacarpophalangeal joint. There seemed to be some atrophy of the fourth interosseus muscles on both sides. There was a marked ataxia on the finger to nose test made worse with the eyes closed. Adiadokokinesis was present. The patient was unable to stand without support, and there was inturning of the right ankle. She was able to stand with slight support with the eyes open, but swayed markedly with the eyes closed. On walking there was a marked swaying and twisting motion of the trunk and incurving of the right foot, the left foot being raised high and thrust down toes first. The left knee jerk was diminished and the right was normal. The achilles jerks were normal. Babinski, Schaefer, and Chaddock signs were present on both sides. The typical foot deformity was noted, with some generalized wasting of the muscles of the legs. The speech was scanning in type without mental deterioration. Scoliosis to the right in the dorsal region was noted.

CASE 5.—A girl, aged 11 years, a first cousin of the foregoing patients, was of normal birth and walked and talked at the usual age. She had never been ill, but her mother stated that the patient had been nervous all her life. She had been subject to "spasms" since she was a few weeks old. During these attacks, the patient was unconscious from six to twelve hours and had bitten her tongue on a number of occasions. During the attacks she assumed a position of extreme opisthotonos with flexion of the arms. The parents stated that she had always seemed normally bright. With the exception of a slight dorsal scoliosis to the left, the general physical examination was negative. At the neurologic examination, concomitant converging strabismus of the right eye and limitation of abduction in the right eye were noted. There was a marked pallor of the right optic disk which was oval, these signs being less marked in the left fundus. There were no other signs of cranial nerve involvement. The knee jerks and the achilles jerks were absent even on reinforcement. The gait was definitely ataxic, becoming more pronounced with the eyes closed. There was beginning foot deformity without hyperextension of the great toe.

CASE 6.—A man, aged 23, a brother of patient 5, was of normal birth and with the exception of an attack of measles at 10 years, from which he made a perfect convalescence, he was quite well until he was 12. At this time he developed difficulty in walking, which became progressively worse until at present he must hold to articles of furniture in getting about the room. General physical examination showed numerous premature contractions of the heart without cardiac disease. There was a very marked dorsal scoliosis to the right; otherwise, physically, he was normal. Examination of the fundus was negative in every detail, except for an entwining of the vessels as they emerged from the disk in each eye with a cilioretinal artery seen in each fundus. The abnormality was considered of congenital origin. There was a slight ataxia on the finger to nose test with the eyes closed. The gait was very ataxic, the patient being unable to stand without support even with the eyes open. With the eyes closed he would fall, and with the eyes open he would sway violently. The knee jerks and the achilles jerks were lost even on reinforcement. There was a bilateral Babinski and Chaddock reflex. There was a loss of the sense of position of the toes in both feet, and a slight disturbance of the sense of position in the upper extremity. Pes cavus was present without hyperextension of the great toe.

CASE 7.—A man, aged 38, uncle of the previous patients, stated that his disability began twenty-five years before, when he was 12 years of age. The first abnormality noted was in his gait, which became hesitant and uncertain. This difficulty in walking was progressive, so that at 20 the patient was confined to a rolling chair, where he has since remained. He stated that he had had considerable difficulty in retaining the urine, although he had not had symptoms of rectal incontinence. The patient's family remarked on his abnormally bright mentality and stated that he had always been studious. He had suffered from frequent headaches since childhood, but was said not to have manifested undue evidences of nervousness during his early years. Physical examination showed numerous premature contractions of the heart without cardiac disease. There was a marked scoliosis and the characteristic bilateral deformity of the feet. The left pupil was slightly larger than the right. The fundus examination showed a motley appearance of the pigment in the chorioretina, which was probably congenital or due to the stretching of the globe in myopia. There was a very marked ataxia in all movements of all extremities. He was unable to stand without support or to walk with support. The speech was very slow and dysarthric. Biceps, triceps, wrist, knee and achilles jerks were all lost. There was a bilateral Babinski reflex and a loss of the sense of position in all four extremities.

CASE 8.—A man, aged 42, was an imbecile, and a history was obtained from his relatives. His disability began at the age of 12 years, with difficulty in walking. For the past six or seven years he had been an imbecile, and for the past twenty-five years had been confined to a chair. For a number of years he had had both rectal and vesical incontinence. Physical examination showed the typical bilateral foot deformity and scoliosis.

The pupils reacted very sluggishly to light, but were otherwise normal. Fundus examination could not be done. Triceps, biceps, wrist, knee and achilles jerks were all lost. There was general muscular wasting, especially noticeable in the supraspinatus and infraspinatus group and in the muscles of the leg below the knee. Bilateral club hand was also noted. Babinski's sign was positive on both sides. The speech was mumbling, hesitant and unintelligible.

CASE 9.—A woman, aged 40, had died one year before this study was begun in an advanced stage of the disease.

CASE 10.—A man, aged 30, had died four years before this study of an undetermined cause with the ataxia far advanced.

From a consideration of these cases I believe that the following facts are evident:

1. The acute infectious diseases of childhood have nothing whatever to do with the production of the ataxia and its concomitant symptoms.

2. When the condition is first noted following measles and like diseases, it is probably due to the patient's weakened condition making evident the ataxia that was already preexistent.

3. There seem to be fairly definite prodromal symptoms of this disease which may be present from five to seven years before the patient becomes noticeably ataxic, such as infantile convulsions, frequent headaches, easy fatigue and general nervous instability. Disappearance of the deep reflexes seems to be an early and constant sign, although in case 4 there was a history of a neurologic examination made five years before at which the knee jerks were absent, while now they are diminished on one side and normal on the other.

4. The ocular conditions are apparently quite significant. According to the literature, ocular abnormalities are not the rule; yet in this series pathologic changes had taken place in the eyes in six of the eight cases. The absence of nystagmus even in extreme positions was noticeable.

5. A striking fact was the constancy with which the disease made its appearance at a given age. In this series seven of the eight patients became ataxic between 11 and 12, and the eighth patient is only 5 years old and not yet ataxic.

6. It is furthermore of interest to note the frequency with which other congenital defects or stigmas of degeneration were observed in addition to the disease itself; namely, malformation of the ears, ocular stigmas, congenital hernia and cardiac abnormalities.

7. The very constant occurrence of scoliosis, which was quite marked in some patients who had had the disease for only a few years, was a subject for speculation. It is believed that this curvature is the result of an unconscious effort on the part of the individual to overcome the ataxic swaying that accompanies purposeful movement.

8. There does not seem to be any rule that may be formulated in regard to the mental changes. The oldest patient was an imbecile; yet the next patient, just four years younger, was unusually intelligent. Both had suffered from the disease for approximately the same number of years. In only one other case in the series was the mentality below the average.

9. Laboratory data, as was expected, did not show anything that could be considered significant.

10. The rate at which the disease progresses is necessarily variable. In a general way it may be said that the child may go at least six years before the ataxia becomes evident. After the ataxia is manifest, the child may be able to get about with fair comfort for from three to four years. All patients in this series were chair ridden in from five to eleven years after the onset. The oldest patient has been so confined for the last thirty years; this, I believe, is one of the longest cases on record.

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ABSTRACT OF DISCUSSION

DR. A. L. SKOOG, Kansas City, Mo.: Dr. Giddings has presented us with a group of patients who have suffered from Friedreich's ataxia and which again only supports the general opinion held in the neurologic group regarding this unfortunate disease. I should like to ask Dr. Giddings whether all these cases were strictly the Friedreich type or whether any of them conformed to the Marie type? Next, perhaps, we may bring up the question, what are we going to do for these unfortunate patients? The prognoses are universally known and they are so distinctly familiar that our attention should, perhaps, be directed toward preventing the further propagation of these unfortunates. I do not know whether there has been much agitation in favor of sterilization, but it seems to me that family groups with this syndrome should be sterilized. Of course, as Dr. Giddings has shown, only a comparatively small percentage of them are affected, and yet the affliction is so unfortunate that we would be better off without the propagation of others.

DR. GLENVILLE GIDDINGS, Atlanta, Ga.: I believe we were unanimous in thinking that these were true cases of Friedreich's disease. Of course, the treatment is unavailing, and I think sterilization is the only solution. This family disease occurred in ignorant farmers whose procreative powers were excessive. It was not unusual to see fifteen and sixteen children in each family.

THE TREATMENT OF GASTRIC HEMORRHAGE *

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By gastric hemorrhage is meant a hemorrhage from the stomach or duodenum, manifesting itself as hematemesis or melena or both, and accompanied by the usual general symptoms of internal hemorrhage; namely, shock, thirst, restlessness and pallor, the severity of these symptoms depending, of course, on the extent of the hemorrhage. The bleeding may be due to a number of different factors, gastric or duodenal ulcer being most commonly thought of in the presence of a hemorrhage, but the rupture of esophageal or gastric varices secondary to portal stasis and gastric neoplasm are equally important and frequent causes. Vomiting of swallowed blood from pulmonary hemorrhage may be difficult to differentiate from true gastric hemorrhage, and occasionally immediate and careful nose and throat examination will show that the blood came from an ulcer or a varicosity in these locations. The mucosal hemorrhages of hemophilia, leukemia, splenic anemia, pernicious anemia, vicarious menstruation and icterus, obstructive or hemolytic, are also to be remembered. These mucosal hemorrhages are often associated with a diminution in the coagulability of the blood, and constitute more of a problem of general constitutional treatment than the hemorrhages due to more distinctly local causes. Hemorrhages from esophageal varices are accompanied by evidences of portal cirrhosis, and are also accompanied by a reduced fibrinogen con-

* Read before the Section on Gastro-Enterology and Proctology at the Seventy-Eighth Annual Session of the American Medical Association, Washington, D. C., May 18, 1927.

tent of the blood. In carcinoma, hemorrhages of considerable extent may be due merely to a general bleeding of the ulcerated surface or may be due to malignant ulceration into a blood vessel, and tend to recur persistently. Gastric polyps may cause bleeding as the result of surface ulceration. In peptic ulcer, the hemorrhage may be the first symptom of an acute ulcer, infective or arteriosclerotic, and occasionally may be followed by perforation if the sudden localized area of necrosis has extended deeply enough. In chronic ulcer, the hemorrhage is usually due to a sudden acute exacerbation with ulceration through a blood vessel, and the indurated area tends to hold the vessel open, preventing retraction and the necessary formation of a firm coagulum in the breach.

Confronted with a patient in shock, who has recently vomited blood and passed bloody or tarry stools, it is imperative that measures be adopted immediately to control the hemorrhage and to prevent its recurrence. At times, a history obtained from friends or relatives will give a clue to the cause of the hemorrhage, or there may have been recent observations on complete gastrointestinal study which practically clinch the diagnosis. Blood studies—counts (cells and platelets), cultures, chemical reactions, coagulation and bleeding time, clot retraction, fragility and icterus index—always give valuable information, being of help both diagnostically and prognostically. It must be realized, however, that for the first three or four days after a hemorrhage, the red blood cell count and hemoglobin estimation are of little or no value, both frequently being normal immediately after the hemorrhage, and declining more or less rapidly as the blood volume is increased by the addition of liquid content, the restoration of cells and hemoglobin being a more lengthy process. As an index of the cessation of hemorrhage, the patient's pulse rate and the disappearance of blood from the stools is of much more value than blood studies. Other forms of investigation are contraindicated, rest being the greatest single factor of safety for the patient following hemorrhage.

The treatment of gastric hemorrhage has long been based on pure empiricism, and the usual method recommended in textbooks and papers on the subject has not varied in years. It has consisted mainly of six weeks' rest in bed, starvation, the administration of coagulants, ice externally and internally and rectal feedings, with some authors also recommending epinephrine, ergot, saline infusions or hypodermoclysis, blood transfusions, and even lavage with warm water or with powerful astringents or escharotics. Yet what physician has not seen patients who gave a history of massive hemorrhage, followed by a day or two in bed on the usual full diet, or by immediate resumption of even hard laboring occupations? After seeing many patients giving such histories, usually in better general condition than patients who had had hospital care during a similar period, I became imbued with the idea that we were overtreating our hemorrhage cases, and for the past six or seven years I have been using a method of treatment which I believe has a sound physiologic basis and which has given much better results than those previously employed.

INDICATIONS FOR TREATMENT

The indications for treatment in a case of gastric hemorrhage are based on several fundamental considerations:

1. A clot or clots must be permitted and encouraged to form at the site of the bleeding.

2. The pressure of the blood in the vessels, lowered as a result of the hemorrhage, must not be raised so suddenly as to blow out these clots.

3. Shock must be combated, but not overtreated, too much stimulation often resulting in recurrent hemorrhage.

4. The digestion of the edges of the exposed blood vessel wound by the gastric juice must be prevented if possible.

TREATMENT

To accomplish these four ends, the following procedures are indicated:

1. Rest must be obtained, which helps to take care of the first three indications. The patient must be kept in bed and his mind must be put at ease. As restlessness in cases of hemorrhage is largely due to fear and to thirst, it is well to explain to the patient that hemorrhages are practically never fatal, but that their extent and their tendency to recur depend on the patient's cooperation in resting quietly and in drinking sparingly. Morphine must usually be given, and in some cases repeated doses are necessary. It helps to combat the shock, but makes the patient uncomfortable later because of its paralyzing effect on the bowels.

2. Coagulation of blood at the site of bleeding is dependent on the blood coagulability being normal. Estimations of blood coagulation and bleeding time, observation of clot retraction, and platelet counts indicate that in hemorrhages from ulcer the coagulability tends to be improved during the hemorrhage, but in many cases due to other causes a lowered coagulability may be an accompaniment if not a cause of the hemorrhage. Even if tests show a normal coagulability, and even though their use may not show any definite change in the blood reactions, it is well to use coagulants of some type in every case of hemorrhage. Several types of coagulants are in general use. The various thromboplastic preparations, extracts of brain tissue, are usually safe. Hemostatic preparations have been recommended. Sodium citrate, from 30 to 50 cc. of a 10 per cent solution, intravenously, has proved to be a successful coagulant. But blood serum has been found to be really the best agent for this purpose. The greatest objection to the use of horse serum lies in the fact that many individuals are sensitive to it and may get severe foreign protein or anaphylactic reactions from it. The danger of this "serum sickness" is not entirely eliminated in the drying process, as I have seen several patients with rather severe urticarial and general reactions following the use of one of the most popular powdered horse serum preparations. The older the serum, the less is its power to improve the coagulability of the blood, so that old diphtheria or other antitoxins are usually of little or no value. Fresh rabbit serum has been found to possess great potency and is usually easily obtained. The dosage of these animal serums is about 10 cc., intramuscularly, which may be repeated every three or four hours for several doses. When a preliminary small dose is given, sensitivity may be detected and severe reactions avoided.

Human blood serum has been successfully employed, by injecting from 10 to 20 cc. of whole blood or serum intramuscularly, the occasional development of a hematoma at the site of injection not necessarily indicating that the coagulant effect of the serum has not been obtained. A heterologous blood, that is, blood of a different type from that of the patient, while desirable, is not necessary to get an effect. The injection of whole

blood intravenously—blood transfusion—also introduces new coagulation factors into the patient's blood.

3. The restoration of blood volume is a procedure regarding which the greatest caution must be exercised. While a badly shocked patient with a feeble, thready pulse and evident air hunger obviously requires more blood in the vessels to carry on the circulation, it is dangerous to increase the blood volume to the point at which increased blood pressure may dislodge a partially formed or insecurely attached blood clot. If, on account of alarming symptoms such as those just mentioned, it is considered necessary to increase the blood volume before the end of the first week after the hemorrhage, it is best to give a transfusion of a fairly small quantity of blood, possibly from 150 to 200 cc. The use of saline solution, rectally, hypodermically or intravenously, while not specifically lowering the blood coagulability, dilutes the patient's blood and is therefore not as valuable a procedure as transfusion, which not only adds all the blood elements but tends to increase somewhat the coagulability of the recipient's blood. A week or ten days after the hemorrhage, when the danger of causing repeated hemorrhage is past, one or more transfusions of 500 cc. or more are of the greatest value and will tend to shorten the patient's convalescence materially.

4. The treatment of shock consists mainly in the insistence on absolute rest, the use of morphine and the replacement of blood volume as previously discussed. Stimulants are rarely indicated and are always dangerous from the standpoint of possibly causing recurrent hemorrhages. The surface of the patient's body should be kept warm by the use of hot water bags or heaters, and chilling by the use of ice, internally or externally, is to be avoided. It is remarkable how quickly even badly shocked patients will rally if not overtreated or maltreated.

5. The diet following hemorrhage is of the utmost importance. Two possible conditions are present in the stomach after a hemorrhage: either the stomach is filled with blood, more or less clotted, or it is nearly empty, with only a few blood clots remaining after hematemesis. The vomiting and the frequent occurrence of a bloody, fluid melena, often mistaken by the patient for a simple diarrhea, indicate that the whole gastro-intestinal tract is in an irritable condition. This general irritability is not favorable for the formation of a firm clot in bleeding blood vessels. The marked stimulation to gastric secretion caused by the high protein (blood) contents of the stomach produces a highly potent gastric juice, which rapidly digests the blood and also attacks the injured vessel wall and the blood clot forming in the recent break. If possible, therefore, it is important to overcome the two undesirable factors of irritability and hypersecretion. As the work of Carlson has shown, an empty stomach is never at rest, so that it would be desirable to keep the recently bleeding stomach as quiet as possible by keeping it at least partially filled. The contents, moreover, should be soothing and should not tend to cause increased bleeding; in fact, they should, if possible, favor coagulation of blood. The contents should further combine readily with the gastric juice, while not overstimulating its production. All these indications can be met by feeding the patient gelatin. In jelly form, gelatin is difficult to swallow when the patient's mouth and throat are dry from loss of blood, so that it is desirable to give it in solution, in which form it has the additional advantage of allaying thirst and gradually replacing blood volume, without losing its beneficial effects in the stomach. A solution of gelatin one-half the strength used for making jelly, with fresh orange or grape juice added, and made more nutritious by the addition of lactose, is palatable and can be used in increasing quantities of from 4 to 6 ounces from every one and one-half to two hours during the first few days after the hemorrhage. After two or three days, cereal gruel, milk, lactose and cream mixtures may be substituted for every other gelatin feeding. Mixtures of this type are also soothing, and, while not coagulant, are desirable for their nutritive value. In a starved, depleted patient an ulcerative lesion obviously cannot heal as well as in a well nourished individual, and our patients, with rapidly increasing nourishment, have done astonishingly well. At the end of seven or eight days a regular ulcer diet can be prescribed, and after from two to three weeks' rest in bed, it is usually safe to begin a complete gastro-intestinal and general study of the patient to determine the cause of the bleeding. After this, proper treatment for the condition found can be instituted.

TABLE 1.—*Gastric Hemorrhage Diet*

Formulas for Feedings			
		Ounces	Gm.
Gelatin solution:	Gelatin	1	20
	Lactose	3	90
	Juice of 1 orange		
	Water	32	1,000
Gruel mixture 1:	Cereal gruel (oatmeal, barley or cornmeal)	16	500
	Milk	14	420
	Cream	4	120
	Lactose	3	90
Gruel mixture 2:	Cereal gruel (oatmeal, barley or cornmeal)	12	350
	Milk	32	1,000
	Cream	4	120
	Lactose	4	120

First and second days Feedings every 1½ hours	Gelatin solution, 4 ounces	
Third day Feedings every 1½ hours	Gelatin solution, 4 ounces Gruel mixture 1, 4 ounces	alternating
Fourth day Feedings every 1½ hours	Gelatin solution, 5 ounces Gruel mixture 1, 5 ounces	alternating
Fifth and sixth days Feedings every 1½ hours	Gelatin solution, 6 ounces Gruel mixture 2, 6 ounces	alternating
Seventh and eighth days: Feedings every 2 hours	Gelatin solution, 6 ounces Gruel mixture 2, 6 ounces Add to gruel mixture, each time, one of the following: 3 ounces cereal, 1 soft poached egg, custard or jello	alternating
Ninth day and thereafter	Long Island College Hospital ulcer diet	

CONTRAINDICATIONS

Certain contraindications must be recognized in the treatment of gastric hemorrhage, and several much used remedies appear to me to be particularly undesirable if not dangerous.

The use of ice, either by mouth or applied externally in an ice-bag, is undesirable on account of its chilling, depressing effect on an already depressed and depleted patient. The rapid melting of ice in the stomach, and the subsequent marked increase in intragastric temperature, was demonstrated by Rehfuss by means of a thermo-electric couple passed into the stomach through a Rehfuss tube.* This rapid rise in temperature must be due to a marked hyperemia of the gastric wall, which is certainly not desirable where a hemorrhage is to be checked, and constitutes a further contraindication to the use of ice.

Fasting, as has been mentioned before, has long been known to be accompanied by periodic, violent gastric hunger contractions, and the fasting stomach has been shown by Rehfuss to secrete gastric juice, so that not

only is the patient's stomach not benefited by the period of starvation and consequent further depletion, but there is the additional hazard of the induction of recurrent hemorrhage.

Epinephrine, either by mouth or hypodermically, if it has any effect at all, may tend to raise the blood pressure, or may increase peristalsis, both of which effects might dislodge a clot. It is hard to conceive why ergot has been at times used in gastric hemorrhage, as its only effect would tend to be harmful. Overstimulation is also undesirable.

Instrumentation or too rough physical examination should be avoided for the first two weeks, for obvious reasons.

Rectal feedings or the use of enemas, which tend to increase gastro-intestinal peristalsis, are not desirable. Rectal feedings are not necessary when the diet I have described is followed, and rectal instillation of oil, 5 or 6 ounces (150 to 175 cc.) to be retained, given nightly beginning with the fourth day, will usually take care of elimination.

TABLE 2.—*Long Island College Hospital Ulcer Diet*

Breakfast:	
	Milk, 8 ounces, with cream if desired
	Cereal, 5 ounces, with milk or cream
	Egg, 1 soft boiled or poached
	Bread or toast with butter, 2 slices
	Fruit juice or stewed fruit (at end of meal)
Midmorning:	
	Milk, 8 ounces; cream, ½ ounce; lactose, ½ ounce, with cocoa if desired
	Always with crackers, toast, bread or cake
Luncheon:	
	Milk, 8 ounces
	Baked or mashed potato or plain spaghetti
	Egg, 1 soft boiled or poached, or cream cheese
	Bread and butter, 2 slices
	Pudding, custard, gelatin, ice cream or stewed fruit
Midafternoon:	
	Same as midmorning
Supper:	
	Same as breakfast or luncheon
At bedtime and during night every 2½ hours, if awake:	
	Same as at midmorning
	Olive oil, ½ ounce three times a day before meals
	Liquid petrolatum, ½ ounce at bedtime
	Water, ad libitum

Surgery is usually contraindicated during or soon after a hemorrhage. The indication for operation usually spoken of is the occurrence of repeated hemorrhages which threaten life. In such a case the patient had best be reserved for operation between attacks of hemorrhage, although patients may have repeated hemorrhages and stop bleeding spontaneously. My colleague, Dr. Frederick Schroeder, recently had a patient whom I saw, who had seven hemorrhages over a period of four weeks, with repeated transfusions, and who finally stopped bleeding spontaneously. Repeated hemorrhages usually mean either a general mucous membrane bleeding, the fixation of a bleeding vessel in a dense mass of adhesions or induration, or extensive carcinomatous involvement with considerable blood vessel necrosis, all of which conditions are not amenable to the rapid surgical treatment which the patient's weakened condition would make imperative. Surgery may, of course, be indicated by the observations on examination after the patient has recovered from the hemorrhage, and should then be performed at the earliest favorable moment.

In order to illustrate how the principles discussed may be practically applied in practice, I quote the following outline, which constitutes the routine treatment in cases of gastric hemorrhage admitted to the gastro-enterological service at the Long Island College Hospital, and give, in tables 1 and 2, the diets used.

ROUTINE IN CASES OF GASTRIC HEMORRHAGE

1. Keep the patient quiet by ordering sufficient morphine to prevent thirst. Bromide and chloral by rectum should also be tried.

2. Order gastric hemorrhage diet (table 1).

3. Type blood of patient, get donors for transfusion, and match their bloods, so as to be in readiness for transfusion if indicated.

4. Blood transfusion is not to be given until after the first week, unless especially indicated by air hunger or a very weak, thready pulse.

5. Blood count (red blood cells and hemoglobin) should be taken every two days.

6. Blood coagulation time and bleeding time should be determined every two or three days, especially before and after transfusion.

7. If the coagulability of the blood is shown to be low, give an intramuscular injection of heterologous blood (from 10 to 20 cc.) or order a hypodermic or intravenous dose of some systemic coagulant and repeat at least once, being careful to avoid anaphylaxis.

8. Make no efforts at moving bowels for three days. On fourth night order warm oil enema (5 ounces to be retained), with small soapsuds enema the next day if necessary. Continue oil enemas each night if necessary.

9. Test stools daily for occult blood until this disappears.

The following factors are to be avoided:

1. Ice or any other food or medication by mouth except as indicated in gastric hemorrhage diet.

2. Sudden increasing of the blood volume, by rectal, hypodermic or intravenous injections, except as noted under "blood transfusion."

3. Raising blood pressure by the use of epinephrine, ergot or heart stimulants, except in severe shock, when stimulants might be given coincidentally with transfusion.

4. Lowering patient's body temperature and increasing shock by use of ice bags. Keep patient warm instead.

The diet prescribed for patients immediately following hematemesis is given in table 1. Ice, food, or any form of medication should not be given by mouth. Each night one-half ounce (15 cc.) of liquid petrolatum should be administered.

SUMMARY

The treatment of gastric hemorrhage is based on the following principles:

1. Enforced rest—physical, mental and gastric.

2. Encouraging the coagulation of the blood at the site of hemorrhage.

3. The cautious restoration of blood volume as may be indicated.

4. The treatment or avoidance of shock.

5. The use of a soothing, nonstimulating diet, combining readily with the gastric juice, satisfying thirst and encouraging coagulation.

6. Complete study of the patient to determine the cause of the hemorrhage, so that suitable treatment for this can be instituted.

7. Avoidance of surgery during or soon after the hemorrhage.

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ABSTRACT OF DISCUSSION

DR. J. RUSSELL VERBRYCKE, JR., Washington, D. C.: Patients can stand pain, and many other symptoms, but no one symptom is so terrifying to the patient, so apt to make him immediately consult medical advice as the sight of blood, and I believe that even the calm of the physician, as a rule,

is disturbed by the sight of one of these big hemorrhages. Fortunately, gastric hemorrhage is comparatively rare, in view of the number of etiologic factors which produce it. I doubt whether more than 4 per cent of ulcers, for instance, ever cause a very large hemorrhage. Second, almost every gastric hemorrhage, if it is properly treated, will stop in time. These hemorrhages are rarely fatal. I am in exact accord with Dr. Andresen on a number of his points, especially as regards the use of transfusion, the use of coagulants and the importance of rest, but on several points I disagree with him. One of these is the use of the ice bag. I still use the ice bag over the epigastrium, and I have never seen shock increased by it. I can readily understand how extensive chilling of the surface might increase shock, but I would dislike not using the ice bag locally. It may be that some years from now we will laugh at the use of the ice bag, the cold of which we know does not penetrate more than a fourth of an inch below the skin, but until that time comes, I am going to use the ice bag. The second point on which I disagree concerns the manner of resting. To my mind, the three essentials in the treatment of hemorrhage are rest, both bodily and of the stomach in particular, morphine in large doses, and the ice bag locally. I am not convinced by Dr. Andresen that the stomach can be given more rest by means of frequent feedings than by leaving it absolutely empty. As a matter of fact, these patients do no have hunger pain after the hemorrhage, showing that they do not have violent peristalsis. I might be inclined, if hunger pain were present, to give feeding or something that would stop that pain, but conditions are entirely different after hemorrhage has occurred from what they were during the previous course of the ulcer. I am absolutely convinced that the stomach is almost at entire rest when nothing by mouth is given, not even a drop of water, and large doses of morphine are administered. I agree absolutely with Dr. Andresen as to the harmfulness of giving a lot of fluid that will raise blood pressure, but I do think that 10 per cent dextrose solution by rectal drip is a great help.

DR. DONALD C. BALFOUR, Rochester, Minn.: If we consider the causes of gastric hemorrhage, we can readily divide them into two groups, the extragastric and the intragastric. Emergency operations for the extragastric causes are practically always unnecessary and, if the patient recovers, it is probably on account of the operation. So far as the intragastric group is concerned, that is, the gastric carcinomas and ulcers, I believe that the incidence of gastric hemorrhage is much higher than that just mentioned. This may be due to the stage of the disease. For instance, I found that in the duodenal ulcers observed at the Mayo Clinic, there was a history of gross hemorrhage in 18 per cent. In gastric ulcer, the percentage is about 21. In gastric carcinoma, gross hemorrhage occurs in about 7.5 per cent. The indications for operation in cases of gastric hemorrhage due to duodenal ulcer must be based on the classification of the case. I believe that operation should never be urged when there has been only one hemorrhage from the so-called silent ulcer. If, on the other hand, a patient has had repeated hemorrhages and has had no other symptoms and a duodenal ulcer is present, his life is menaced by such hemorrhages, and removal of the ulcer by operation protects him against subsequent hemorrhages. If, after a satisfactory course of medical treatment, symptoms still persist and hemorrhage has occurred, operation should be advised. So far as the principle of operation is concerned, it is reasonable to excise the ulcer if possible. It is most significant that even if the ulcer is excised and a suitable operation performed to prevent recurrence, subsequent hemorrhage may take place. Such hemorrhage is usually due to the fact that other predisposing causes of hemorrhage were present which were not recognized at the operating table. Probably most of such hemorrhages are caused, either directly or indirectly, by the liver. So far as gastric ulcer is concerned, there are other reasons why operation is indicated. If bleeding has occurred, operation is clearly indicated, not only because of the hemorrhage but because it cannot be definitely determined that the lesion is benign. Finally, I should like to say a word about benign tumors of the stomach. We have overlooked some of these small benign tumors which have been associated with marked secondary anemia. Within the last year I have seen three patients in whom a diagnosis of pernicious anemia has been made—two elsewhere and one made in our clinic—in whom we finally demonstrated by fluoroscopic examination, small, benign tumors, in the posterior wall of the stomach. On removal of these tumors, the patients were completely relieved of the anemia and returned to health.

DR. FRANK SMITHIES, Chicago: From the history one learns whether or not one is dealing with primary hemorrhage. If it is a primary hemorrhage, usually the patient can be managed safely from a nonsurgical standpoint for the time being. If the patient has had a hemorrhage before, then, in my opinion as an internist, one should get in touch with a competent surgeon. One should search carefully for evidence that the particular hemorrhage is or is not associated with signs of threatened or actual perforation, because 66 per cent of ulcers which have bled once, or more than once, eventually will perforate, either actually or with fibrous protection. Hence, it is useless to be carrying out many of the measures which the author suggests if one has a patient whose ulcer has perforated or is about to perforate. I have seen a dozen cases in which actual perforations occurred as the result of patients being rushed to fluoroscopy and heavy barium mixtures poured into the stomach to determine whether bleeding came from a gastric or a duodenal ulcer. Three weeks after the cessation of a gross hematemesis, one may carry on a careful survey of the alimentary tract with reasonable safety, other things being equal. I must protest against the use of mouth feeding in cases of bleeding ulcers. Feeding induces peristaltic activity, and by that means clots are dislodged and bleeding continues or recurs. Fluid is most important in preventing shock, not only with the idea merely of supplying fluid, but to prevent shock from central dehydration. I use none of the blood coagulants that have been mentioned. I have never seen a patient bleed as the result of massive transfusion of whole blood. The improvement in the general tone, particularly the capillary bed tone, as a consequence of the increased volume of normal blood, is greater than is the harm done by a theoretical raising of the blood pressure. In fact, after whole blood transfusion the blood pressure is rarely raised more than from 5 to 15 points, and this increase is only transient. I strongly urge that in all instances, before the patient is actually dying from lack of blood, one should perform a transfusion, if only to make the patient that good surgical risk which Dr. Balfour requires, and to give him the chance to have his life saved by operation. Finally, it appears to me that the so-called diets which have been offered here for exhibition during the bleeding stage are dangerous. No food by mouth and quiet to the affected area by large doses of morphine have universally been found more efficacious by those familiar with gastric bleeding. These measures interfere least with continued observation. I urge that blood counts be made at least twice a day, and a leukocyte count every two hours. One can tell when gastric hemorrhage has ceased by adopting Rodman's old procedure, i. e., promptly washing the stomach out with water at 110 F. in order to prove that there are not massive clots which keep the stomach working just as hard as if it were trying to digest a piece of beefsteak. The heat is very efficacious as a local coagulant.

DR. A. F. R. ANDRESEN, Brooklyn: Although my paper mentions surgical treatment, I avoided it in my abstract. I agree with Dr. Balfour that active hemorrhage is a contraindication to operation. The few patients we have operated on during repeatedly recurrent hemorrhages have died as a result of the operation. Patients with such hemorrhages usually have carcinoma, although occasionally a bleeding vessel is found held open by adhesions or induration. Transfusion is dangerous in the first few days after hemorrhage; we have seen several cases of repeated hemorrhages immediately after transfusion. However, in case of definite indications, as stated in the paper, we do not hesitate to give even large transfusions early. Roentgen-ray examination is dangerous if done too early, but we have never seen recurrent hemorrhage caused by the roentgen ray except in cases of carcinoma, and even here early diagnosis is so important that deferring a roentgen-ray study for a long time is more disas-

trous than a possible hemorrhage. We usually order roentgenographic study after two or three weeks. In case of large crater ulcers, a four to six weeks' ulcer treatment, followed by a roentgenographic check-up, is not too great a risk. A large proportion of these ulcers are benign, and if malignant, are usually inoperable. The patient's terror at the sight of blood is certainly increased by enforced starvation, thirst and the chilling effect of ice bags. As far as the ice bag is concerned, its only advantage, the prevention of undue motion on the part of the patient in the effort at balancing the bag on the abdomen, is more than overcome by the disadvantage of the wakefulness induced by fear of its becoming dislodged during sleep. Both hunger and thirst are relieved by the gelatin solution, and messy and distressing rectal, subcutaneous or intravenous administration of fluids is obviated as a result of the administration of about 40 ounces of fluid by mouth in the first twenty-four hours. The method described in the paper is not an experiment. It has been used at the Long Island College Hospital for eight years in at least sixty or eighty cases. It is safe; it does not increase the tendency to bleed; it has reduced recurrent hemorrhages to a minimum; it makes the patients more comfortable and keeps them better nourished and, above all, it admits of earlier diagnosis and subsequent necessary treatment than by the usual methods.

THE MANAGEMENT OF CANCER OF THE BREAST *

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From statistics such as those of the Leeds report, the Massachusetts General Hospital report, and the papers of the Mayo Clinic, and from the clinical observations of any of us who see a considerable number of patients with cancer of the breast, we are compelled to draw at least one obvious conclusion; namely, that the prospect of achieving a surgical cure depends almost entirely on the state of the disease at which the patient submits to operation. Although the prognosis is slightly modified by the degree of malignancy and by the age of the patient, it is favorable in from 65 to 90 per cent of the cases in which the tumor is confined to the breast, and it is hopeless in from 80 to 90 per cent of the cases presenting axillary metastases.

If this is true, as is generally agreed, it would seem that we have in our hands an efficient weapon with which to combat cancer of the breast. Operation in the primary stage, as compared with late operation, offers so much that it seems incredible that intelligent and enlightened women should postpone this life-saving procedure.

Almost every woman who can read knows that a lump in the breast may be cancer. Every physician knows that surgery must be early to be effective. Because of its location, almost every breast tumor is discovered in the primary stage, and almost invariably surgical removal is properly advised by the first physician consulted. Why, then, do deaths continue to exceed recoveries in this disease?

A review of my records shows that in the fatal cases there was an interval of from three months to two years between the discovery of the tumor and submission to operation. The same records show the reasons for delay, and that they can be classified in two groups. In the first group, fortunately a small one, the first physician consulted advised watching and waiting. That physician is hopeless, and that patient is helpless. In the second group, the patients believed that the operation, if not successful, would hasten their death, or they knew that they would be disabled for a long time following the operation, and they postponed it until a more convenient season. These patients feared the radical operation, and believed, first, that it might spread the disease, and, secondly, that it would cripple them.

Since the greatest danger to life lies in delay, and since the reason for delay is usually the patients' fear of the dangerous and crippling operation, I am convinced that a tremendous advantage can be gained in the way of advancing the time of surgical relief by abandoning the radical operation, and substituting for it simple amputation of the breast with subsequent roentgen-ray treatment. It is not easy to persuade a woman, before a positive diagnosis can be made, to submit to a procedure as extensive and mutilating as the average block dissection of the axilla. On the other hand, almost any woman is willing to sacrifice a breast if she knows that she can be out of the hospital in less than a week; that she will have no impairment of function of her arm and shoulder, and that her chances for recovery are at least four times what they will be if she waits until a definite diagnosis can be made clinically.

There are at least two classes of cases in which there should be no argument as to the advisability of performing a simple amputation in preference to a radical operation. One is the type in which the tumor is confined to the breast, and the other that in which the disease is so far advanced that the supraclavicular glands are palpable, or there is roentgenographic evidence of the presence of mediastinal metastases. Anything more than simple amputation of the affected breast is unnecessary in the first class and futile in the second. Even in cases showing beginning enlargement of the axillary lymph glands, I believe that little is gained by surgical invasion of the axilla, and that the great majority of patients will have longer and more comfortable lives if only the primary tumor is removed, and roentgen-ray treatment depended on to retard the axillary, supraclavicular and mediastinal extensions. Occasionally, of course, neither the patient with axillary metastases nor her physician is willing to accept such a pessimistic prognosis, and it is proper in such a case to attempt a radical surgical cure. However, before the patient is urged to submit to more than palliative amputation and irradiation, she has the right to know that the chances are at least four to one against her; that if the radical operation fails to remove every cancer cell, her life will be shortened, and that in either case her suffering from edema, neuritis and loss of function is likely to be increased.

Available statistics show that patients who do not receive postoperative roentgen-ray therapy live about as long as the ones who are treated. This fact has been assumed to mean that postoperative irradiation has no value as a prophylactic against recurrence, and there has been a tendency in some quarters to abandon its routine use. The experience of many roentgenologists has convinced them that this tendency is wrong. Postoperative treatment is often advised, because of a high degree of malignancy, an advanced stage of the disease, or the surgeon's fear that the malignant growth has not been entirely removed. Probably a more nearly correct interpretation of the statistics is that the lives of such patients are extended by irradiation to approximately the same length as those for whom postoperative treatment is deemed unnecessary.

* Read before the Section on Radiology at the Seventy-Eighth Annual Session of the American Medical Association, Washington, D. C., May 19, 1927.

Theoretically, at any rate, effective postoperative treatment consists in an attempt to deliver to the anterior chest wall, and all parts of the axilla and supraclavicular space, enough radiation at least to inhibit the growth of cancer cells. Such a dose is about the same as that required to destroy the average epithelioma, and can be further defined as the amount which produces scaling but not blistering when applied to the healthy skin. The anatomic distribution of the dose throughout the parts without too much injury to the lungs and pleura is a technical problem which can be solved easily enough by following any one of the several standard technics. Whether the entire dose is given at one sitting or distributed over several weeks probably makes little difference. The divided dose method is certainly less trying to the patient.

In the early cases, the usefulness of preoperative irradiation is somewhat neutralized by the danger that some patients may refuse or postpone operation in the hope that the shrinking of the tumor, following the first large dose of rays, indicates that the cancer has been destroyed. Unless the physician has the entire confidence of the patient, it is advisable either to omit preoperative treatment or to operate immediately after its completion, without waiting for the size of the tumor to diminish. In advanced cases, this objection to preoperative treatment does not apply, and its use should be strongly urged. In a considerable number of cases of this class, roentgen-ray therapy is followed by disappearance of the glandular metastases and definite shrinking of the tumor. As every roentgenologist knows, it is much more difficult to influence primary than secondary growths, and there comes a time when the tumor in the breast no longer diminishes in size, or it may begin to grow again. This, in my opinion, marks the time when it should be removed.

The palliative effect of roentgen-ray therapy is too well known to require much discussion. It is best observed in the aged, many of whom can be enabled to live out their allotted span even without operation. In the obviously hopeless cases, irradiation often prolongs the period of comfortable life, relieves the intolerable pain of bone metastases, and almost always prevents breaking down and ulceration of the tumor, with its attendant pain, foul odor and mental anguish.

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ABSTRACT OF DISCUSSION

DR. B. H. ORNDOFF, Chicago: I agree entirely with the main statements of the author. Referring to the statement that the possibility of cure depends almost entirely on the stage at which operation is done, I wish to call attention to the following points: First, the influence of heredity is a factor, and I believe that its importance cannot be overestimated, but its study gives us aid principally in determining the prognosis. Second, the possibility of cure is influenced markedly by the character of the surgical methods instituted. The author refers, I believe, to the classic radical surgical resection, and I am in full accord with his statements. However, my own experience during the past three years with methods of electrical resection, and the electrical control of hemorrhage, for both breast amputation and radical resection even into the axilla and clavicular spaces, has convinced me that there is much to be gained by this method of surgical intervention. Third, the possibility of cure and the stage or time for operative intervention is facilitated and lengthened by the advantages of electrical resection, and the open method advocated by Emil Beck permits radiotherapy of a character which offers greater efficiency in checking extension and recurrence than can possibly follow in the cases in which radiotherapy is administered into tissues which have suffered the traumatic and circulatory derangement that necessarily follows a mastectomy performed by the usual surgical procedures. Recurrence in breast carcinoma seems to present one of the very important phases in the management of this disease, and while in this paper attention has been directed almost entirely toward primary manifestations, I believe its importance should be emphasized in the discussion. In the management of the primary manifestations, we are able to do much toward preventing recurrence by employing methods of electrical resection and control of hemorrhage, together with the open wound for more efficient radiotherapy.

SUGAR TOLERANCE AS AN AID TO DIAGNOSIS *

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This paper presents the details of a quantitative method for the determination of the sugar tolerance or better "assimilation limit"; its standardization with groups of normal controls, and the results of its application to a large group of cases presenting a variety of disease conditions. Certain portions of this work have already appeared,[1] and this article summarizes these and the later portions of the study.

The earlier method of determining the assimilation limit by the oral administration of graded doses of sugar and the examination of the urine for the appearance of a melituria was standardized by Hofmeister [2]

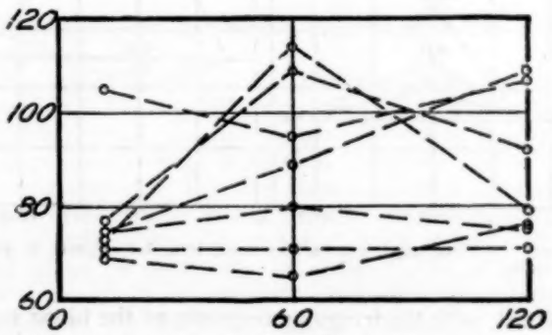

Chart 1.—Blood sugar curves under stimulus of subtolerance dose in group of hypothyroid cases; blood sugar time in minutes.

in a series of experiments with dogs. He demonstrated that (*a*) the ingestion of an excess of a given sugar above the assimilation capacity of the individual will produce a transitory appearance of sugar in the urine; (*b*) the amount producing this melituria is a constant for the individual with any one sugar but varies with the kind of sugar used. He also remarked the carbohydrate paradox: that increase in the dose above the assimilation limit does not produce a quantitative elimination of the excess.

Recently, the development of exact methods of blood analysis and the observation of the fact that provocative sugar meals produce significant changes in the level of the blood sugar has led to the adoption of the

* From the Evans Memorial.

* Read before the Section on Pathology and Physiology at the Seventy-Eighth Annual Session of the American Medical Association, Washington, D. C., May 20, 1927.

1. Rowe, A. W.: The Metabolism of Galactose: I. The Threshold of Tolerance in Normal Adults, Arch. Int. Med. **34**: 388 (Sept.) 1924. Rowe, A. W., and Chandler, J.: II. Blood Sugar Curves, Endocrinology **8**: 803 (Nov.) 1924. Rowe, A. W.: III. The Influence on the Tolerance of Disturbed Endocrine Function, to be published; abstr., J. Biol. Chem. **67**: xlviii (Feb.) 1926.

2. Hofmeister, F.: Ueber Resorption und Assimilation der Nährstoffe; über die Assimilationsgrenze der Zuckerarten, Arch. f. exper. Path. u. Pharmakol. **25**: 240 (Feb.) 1888-1889.

present well known procedure of tolerance testing. Jacobsen's [3] assumption that there is a real threshold has been an important factor in this choice.

There are numerous objections to the blood sugar curve method, some of which I have already voiced in a previous article.

First, the shape of the curve is determined, in largest measure, by the size of the dose, as compared with the individual assimilation limit. Massive supertolerance doses tend to assume the trend regarded as characteristic of diabetes, while subtolerance test meals may exhibit a variety of forms which tend to show but little change after the administration of the sugar.

Second, straight line interpolation between somewhat widely separated points does not give any real information concerning the true shape of the curve, as has recently been emphasized, among others, by Bock, Schneider and Gilbert.[4] The actual individual curves based on frequent samples are highly irregular. This point is illustrated in chart 2, in which *A* shows a uniformly increasing rise with increasing dosage, while *B* exhibits the opposite relation.

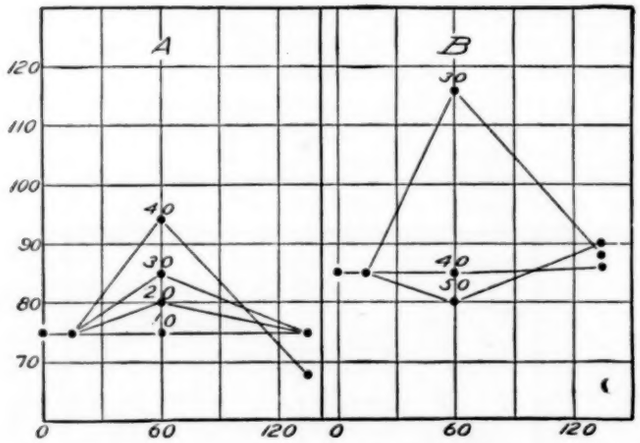

Chart 2.—Blood sugar curves illustrating irregular response to graded test meals.

Third, with the irregular response of the blood sugar curve to variations in the exciting dose, the method cannot be regarded as quantitative even when a series of curves at different dosages are determined. This is the vital objection, for, as will be shown in the body of this paper, the value of the sugar tolerance for differential diagnosis lies in the quantity relation.

The consideration of these facts leads inevitably to the selection of the earlier urine test to indicate when the assimilation power has been exceeded. It has long been recognized that the urine always contains traces of reducing bodies of unknown composition and, further, that food ingestion produces an increased leakage of them through the kidney ("glycuresis"); but these facts do not offer any impediment because it is readily possible so to order the test as to eliminate them.

To crystallize the matter, the definition may be offered that the tolerance level ("assimilation limit") is that dose of sugar which, under standard conditions of administration, will produce uniformly a brief melituria detectable by a dependable reagent (Benedict's), while a similar dose a few grams less in amount will fail to do so.

3. Jacobsen, A. T. B.: Untersuchungen über den Einfluss verschiedener Nahrungsmittel auf den Blutzucker bei normalen, zuckerkranken und graviden Personen, Biochem. Ztschr. **56**: 471, 1913.

4. Bock, J. C.; Schneider, H., and Gilbert, M.: Blood Sugar Studies: Initial Rise, J. Biol. Chem. **69**: 1 (July) 1926.

The choice of a sugar is of primary importance, and for the present study galactose has been selected for the following reasons:

(*a*) It is a hexose sugar and therefore directly absorbable.

(*b*) It can be prepared in a state of high purity, a fact of utmost importance.

(*c*) It is not foreign to our normal nutrition.

(*d*) It is a glycogen former.

(*e*) It possesses an assimilation limit which is too low, under all conditions, to excite those digestive disturbances which so frequently render invalid tests with dextrose and levulose.

(*f*) The two sexes, as will be shown later, show an essential difference in their response.

THE TECHNIC OF THE TEST

To insure accuracy, certain precautions must be observed:

1. The sugar must be very pure to prevent the leakage through the kidney of foreign reducing material, capable of absorption but not utilization.

2. The sugar must be administered dissolved only in pure water and with the patient in a basal state. Fruit juices and other adjuvants including food will vitiate the test.

TABLE 1.—*Directions for Galactose Test*

	5 a. m.	Void urine and discard.
5 to	7 a. m.	Collect control urine (G-1).
	7 a. m.	Drink surgar dissolved in from 100 to 200 cc. of pure cold water.
7 to	9 a. m.	Collect first test urine (G-2).
9 to	11 a. m.	Collect second test urine (G-3).

Test urines with standard copper reagent (Benedict's).

3. The oral route is best as it is the simplest, and the possible error from variation in the rate of absorption has been shown not to be significantly large.

4. The patient must be in good nutritional equilibrium before the test is made.

5. Muscular effort and extremes of heat and cold are to be avoided during the test. Keeping the patient in bed during the observation is to be recommended.

6. Since renal injury may introduce a source of error, the level of kidney function should be determined.

The details of the procedure can be presented best in tabular form.

TABLE 2.—*Sequence for Sugar Dosage*

First Day	Second Day	Third Day
		If negative give 60 Gm.
	If negative give 40 Gm.	
20 Gm.		If positive give 30 Gm.
	If positive give 10 Gm.	
		If positive give 5 Gm.

That the test may be carried out in three days, the sequence given in table 2 has been adopted for the sugar dosage.

If the reaction is negative with 60 Gm. and the patient will cooperate, higher levels may be tested. As a practical matter, however, levels above 60 Gm. have the same general significance.

The results obtained with normal individuals can be presented most compactly in tabular form (table 3).

RESULTS AND COMMENT

These data were derived from a group of normal controls and from those patients in a series of several hundred in whom no disease condition could be demonstrated which was known to affect the sugar tolerance. In addition to the 100 subjects recorded, thirteen others gave levels 10 Gm. either above or below that indicated in the table. They practically cancel one another and do not affect the average. But few comments are necessary. All of the females had established the catamenia and were still menstruating, and the test was applied in the intermenstrual period. The intrinsic sex difference is clearly shown. All the subjects were in a state of good nutritional level. The tolerance is seemingly independent of body weight. This fact should be taken into consideration in those investigations in which an effort is made to increase precision by gaging the dosage by the weight of the individual. The independence of the dose from the weight factor is even more strikingly illustrated in a group of cases presenting endocrine disturbances.

TABLE 3.—*Normal Tolerance*

Tolerance	Male	Female
Age, High	30 Gm.	40 Gm.
Low	70 years	55 years
Average	11 years	12 years
Weight, High	32.5 years	32 years
Low	97.6 Kg.	97.9 Kg.
Average	37.0 Kg.	40.4 Kg.
Blood sugar	65.8 Kg.	62.8 Kg.
Number of cases	50	50

TABLE 4.—*Relation of Weight and Dosage*

Diagnosis	Number	Sex*	Weight (Kg.)	80 to 110 Mg. Tolerance	Basal Metabolism
	B-76	♂	113.3	20	—17%
	B-196	♂	24.0	20	—10%
	B-293	♀	114.1	20	—19%
Pituitary dysfunction.	B-245	♀	38.2	20	—21%
	B-194	♀	164.1	10	— 5%†
	B-302	♀	33.1	10	— 5%†
	B-50	♀	110.0	20	—17%
	S-303	♀	105.7	20	—13%
Hypogonad	S-736	♀	36.2	20	—18%
	B-204	♀	35.8	20	—
	S-1043	♀	137.0	80	—19%
Hypopituitary	S-766	♀	38.0	80	—21%

* Male is indicated by ♂ and female by ♀.
† These values are probably somewhat high.

The data given in table 4 are the extremes of individual series of comparable cases whose tolerance is the same and with weights intermediate between the values given. As was stated above, the sexes show a basic difference in their tolerance for galactose. Apparently the male throughout his life, if health and reasonable nutritional equilibrium are maintained, will respond to 30 Gm. of galactose and be negative with 20 Gm. With the female, however, marked differences can be demonstrated that seemingly depend on the several levels of sexual maturity and activity. Some such difference might have been anticipated from the fact that the mammary gland plays an important part in the synthesis and storage of galactose.

The relation of changes in ovarian activity to sugar tolerance is illustrated in table 5.

The only tolerance level that remains in doubt is that following the menopause. For convenience sake 10 Gm. intervals are used. Naturally, in all the cases the actual zero point lies between the smallest dose which excites melituria and the largest which is negative; i. e., within a 10 Gm. interval. Attempts to define the limits more closely would be most time consuming, while the minor variations that might thus be brought to light would be without practical significance for present purposes. As shown in the table, it is probable that the average postmenopausal level is slightly below that of mature sexual activity.

In close connection with the foregoing study, a special series of cases has been studied both during and between the menstrual periods, all other measurements here recorded having been made between periods. This phase is incomplete but enough data are available to show that when the tolerance is normal there is a drop of about 10 Gm. during the period. On the other hand, when the tolerance is already lowered to the prepubertal level, no change occurs during the cycle.

That changes in hormonal activity occur during pregnancy could confidently be predicted. The actual records, however, are highly significant. The results are given in table 6.

TABLE 5.—*Age Influence*

Status	Total Cases	Age (Years)	Blood Sugar (Average Mg.)	Tolerance (Gm.)
Prepubescent	12	8 — 14 Av. = 11	101	20
Pubescent	6	10 — 14 Av. = 12.5	94	30
Adult (unmarried)	10	26	92	40
Adult (married)	9	35	95	40
Postmenopause (unmarried)	7	45 — 64 Av. = 53	97	6 = 30 1 = 40
Postmenopause (married)	11	48 — 70 Av. = 56	100	8 = 30 3 = 40

The values given in table 6 introduce another consideration. During the early part of the pregnancy the tolerance falls slightly; in the later stages it assumes the prepubertal level. Folin and Berglund [5] have made out a strong case for the absorption and storage of carbohydrate by the tissues, and the present case would seem to offer a possible proof of their thesis. In the early stages of pregnancy, some agency leads to a fall in tolerance, but as the state progresses the synthetic function of the mammary glands begins to manifest itself, galactose is formed, and by the time parturition occurs the glands are so saturated that their storage capacity is practically eliminated. The results two weeks post partum offer some further support for this conception, since the still lower tolerance here observed could be taken to indicate an overproduction of galactose. It is significant that only under this condition does any female with ovarian involvement show a value of less than 20 Gm., as will be shown later. Another interesting observation is found in the following fact:

TABLE 6.—*Child-Bearing Influence*

Condition	Total Cases	Tolerance (Gm.)	Blood Sugar (Average Mg.)	Age (Years)
Pregnant:				
Early	3	30	92	21 — 37
Late	7	20	89	
Postpartum, 2 weeks	9	10	—	20 — 39
	1	20	—	
Postpartum, 6 months:				
Lactating	5	1 = 40	105	36
		4 = 30	95	24 — 29
Not lactating	8	6 = 40	97	27 — 40
		2 = 30	94	26 — 28

5. Folin, Otto; and Berglund, Hilding: Some New Observations and Interpretations with Reference to Transportation, Retention and Excretion of Carbohydrates, J. Biol. Chem. **51**: 213 (March) 1922.

In an otherwise healthy young women from whom both breasts had been amputated for cosmetic reasons (malignant tumors may lower tolerance and so lie outside the present consideration), the sugar tolerance was found to be 20 Gm.[6]

Naturally, a single case does not permit more than an interesting observation, but such evidence as it offers is directly confirmatory of the speculations given above. The cases studied six months post partum show a trend that is in accord with the general thesis. It should be emphasized that irrespective of their theoretical bearing, the observed facts establish criteria for the use of the test during this period of life.

Another interesting light is thrown on the sexual influence of castration. A few cases are recorded in table 7.

The seven cases reported all show the prepubertal tolerance of 20 Gm. which is usually produced by castration. The group of three with a tolerance level of 30 Gm. were examined at the end of convalescence from the operation. They will be studied again a year hence. The only real exception is found in the single patient who was operated on twenty-two years ago at the age of 21. Whether some ovarian tissue was left in situ, or whether the early castration is the factor,

TABLE 7.—*Influence of Castration*

Total Cases	Age (Years)	Elapsed Time (Average Years)	Blood Sugar (Average Mg.)	Tolerance (Gm.)
7	33 — 68 Average = 50	10	88	20
1	43	22	103	30
3	42	Few weeks	106	30

can only be surmised. Suffice it to say that bilateral oophorectomy after a reasonable lapse of time apparently produces a level of 20 Gm. for the galactose tolerance.

The data here presented indicate the values that are to be regarded as "normal" under the various conditions encountered in the application of the test. For the male there is a uniform standard of 30 Gm. seemingly independent of age, of weight, or of other major biologic differences. Even castration of the adult male (I have not had an opportunity to observe castrated children) does not produce any change in the tolerance. This fact may serve as added circumstantial evidence in support of the theory discussed above.

With the female, however, relatively wide differences exist, seemingly dependent on sexual maturity and activity. To permit interpretation, deviations from the normal must be expressed in relative terms as percentage variation from the norm of each individual. For example, for a person whose normal tolerance is at 40 Gm., a change of 10 Gm. equals ± 25%; if at 20 Gm., the same change becomes ± 50%. For the sake of uniformity, the male deviations are expressed in the same conventional way. In table 8 are gathered the results of the application of this test to a series of patients, some of whom presented endocrine disease, while a group of 500 suffered from disorders unassociated primarily with the ductless glands.[7]

6. This case was studied through the courtesy of Dr. Robert B. Greenough.

7. It must be understood that the diagnoses here recorded were the result of elaborate clinical and laboratory studies. An endocrine etiology was accepted only after all possible nonendocrine causes had been eliminated by test and observation. Diabetic persons have not been considered, as the carbohydrate metabolism in this condition is too well understood to require discussion in this paper.

Few words of explanation are necessary. Pituitary and thyroid groups contain hyperfunctional, dysfunctional and hypofunctional groups. It is obvious that the pituitary gland exercises a profound influence on carbohydrate metabolism, while more than two thirds of the thyroid cases are normal, and the average deviations fall far short of the magnitude of those determined by pituitary disease. The gonad cases are all of lowered function (I have never been privileged to observe a case presenting the antithesis of the picture produced by castration), and the sex difference here portrayed has already been discussed. It is perhaps worthy of comment that the hypo-ovarian cases fall between the lowered levels produced by overactivity of the thyroid and the posterior lobe of the pituitary.

TABLE 8.—*Average Deviation of Tolerance*

Gland or Group	Above Normal	Below Normal	Percentage of Series with Normal Tolerance
Pituitary (400 cases).....	+73%	—53%	4
Thyroid (200 cases).....	+32%	—30%	69
Gonad (female) (200 cases)..	0	—44%	0
Gonad (male) (15 cases)....	0	0	100
Suprarenal (15 cases).....	0	—59%	23
Pluriglandular* (20 cases)...	+75%	—56%	18
Not endocrine (500 cases)....	+33%	—45%	41

* The magnitudes of this group are somewhat misleading, as they represent algebraic sums of like or opposite effects that are not uniformly represented in the individual groups. These cases all owe their pluriglandular character to a gland failure of surgical origin superimposed on a functional disorder of some other member of the endocrine group. The author does not have any valid evidence of the existence of the conventional pluriglandular syndrome; i. e., the simultaneous involvement of two or more ductless glands.

The few suprarenal cases here recorded show results wholly at variance with the reports of other observers. They were all cases of suprarenal failure (chiefly Addison's disease), and three fourths showed a lowering of tolerance equal to that of the pituitary group. I have discussed the discrepancy at length elsewhere.[1]

The nonendocrine group shows an incidence of aberrant sugar tolerance of moderate magnitude in more than half of its components. Since the sugar tolerance is one important member of a system of tests designed to establish differential diagnoses, a further analysis of the members of this group may not be inappropriate. The diagnoses in 100 well established cases are given in table 9.

TABLE 9.—*Analysis of 100 Nonendocrine Cases Showing Lowered Tolerance*

	Number of Cases
Lesions of brain or cord.....	43
Psychoneuroses	15
Syphilis	15
Primary anemia	7
Asthma (with epinephrine medication).....	2
Malignant tumors	7
Liver diseases	7
Hypertension	4

Increased tolerance was observed only in cases presenting demonstrated lowered kidney permeability.

Lesions of brain and cord, including tumor, traumatic injury, epilepsy with degenerative changes and conditions subsequent to encephalitis, constitute nearly one half of the group. The psychoneurotic group (chiefly frank psychoses) and syphilis comprise another third. Liver disease, as has been frequently recorded, lowers carbohydrate utilization. The point of importance for this discussion is the limitation of the specific diagnostic significance of even so informative a

test as is the quantitative determination of the galactose tolerance. The individual test derives authority only as it is interpreted in the light of a large number of other pertinent observations.

SUMMARY

1. A sugar tolerance test may be made with pure galactose.

2. The healthy male is found to have a constant tolerance throughout life but the female, starting at a level below the male in the prepubertal years, exhibits a rising tolerance with sexual development and in maturity possesses a level superior to the male. The menopause seemingly causes a retrogression toward the male level.

3. Castration in the male does not produce any change; in the female, it causes a lowering which may reach the prepubertal level.

4. Pregnancy lowers the mature tolerance, and the act of menstruation seemingly shows a like tendency.

5. Disturbed function of the several endocrine glands produces changes in the tolerance, the pituitary and the suprarenal exercising the greatest, and the thyroid the least influence, if the testis is excluded.

6. A variety of nonendocrine conditions, among which lesions of the central nervous system, syphilis, primary anemia, malignant tumors and liver diseases may be enumerated, tend to lower the tolerance, while serious renal disease may increase it.

ABSTRACT OF DISCUSSION

DR. CHARLES H. LAWRENCE, Boston: In working with functional disorders, we are inclined to put too much faith in some one single test. At present, the basal metabolic rate occupies the limelight. Alone, it often has no specific diagnostic value and should be interpreted in connection with a number of other tests, which focus on the same point from different angles. The cases that are most difficult of diagnosis are those which show basal rates between minus 10 and minus 20 per cent. There are numerous conditions which might account for such changes in the basal rate. It is not safe to ascribe them all to failure of the thyroid gland, and it certainly is not safe to treat them all with thyroid extract. Determination of galactose tolerance has been a great help, in my experience, in separating hypometabolisms due to thyroid failure from those due to other causes. For example: Pituitary failures show the greatest deviation from the normal in sugar tolerance. They affect basal metabolism less than does the thyroid and, therefore, a basal rate between minus 10 and minus 20, if due to pituitary disturbance, will be accompanied by a marked change in the galactose tolerance, whereas if due to thyroid failure, there will be, as a rule, no change in tolerance. Again, the female gonad influences the tolerance in the opposite direction, so that determination of the galactose tolerance is a help in identifying gonadal disturbances. We have used the test in more than 1,500 cases, and it has been of great value in distinguishing between various causes of hypometabolism. The question arises as to how great a factor renal permeability may be in causing changes in sugar tolerance as determined by this method. I do not believe that there could be enough change in the renal permeability to account for variations of 2,000 per cent in the sugar tolerance; hence I believe that the results obtained indicate the tolerance of the body for sugar, and are not significantly influenced by renal permeability. I believe that this test is an extremely valuable addition to the methods of diagnosis in functional disturbances. It is only one of a group of tests, but all diagnoses must be reached by properly evaluating the results of a group of tests and one's observations rather than by relying on any single one. As a single test, this one seems to me to be among the most important in such a group.

DR. H. J. JOHN, Cleveland: Dr. Rowe adds another method of studying carbohydrate metabolism. Its simplicity is commendable. The dosage that he has mentioned is so small that it does not cause any gastric upsets, and the test is simply confined to the quantitative examination of the urine. The galactose test was used about twenty years ago as a means of studying liver function. It was used in Germany and Austria, and it was shown that when there is liver involvement, especially when the parenchyma of the liver is involved, there is increased excretion of galactose. Another factor that also enters in here is the question of the involvement of the kidney. With nephritis, of course, one gets retention of galactose; consequently, that would decrease the excretion of the sugar. Dr. Rowe has carefully eliminated all nephritic patients, so that only those who apparently are not nephritic are left; but we know that when we draw a line somewhere, we can never place that line in any group of disease conditions right at their incipience. The question arises, as it does in all tests, of the exact line at which the normal ceases and the pathologic begins; that is, whether or not there is not increased excretion of galactose in the borderline cases of liver involvement and decreased excretion in borderline cases of renal involvement which we could not demonstrate with our functional tests because our demonstration naturally comes when a pathologic change is sufficiently grave so that ordinary tests will show it. I think this offers a very interesting study for an investigation of the carbohydrate metabolism.

DR. ROY G. HOSKINS, Columbus, Ohio: We have been hearing something which is nearly unique in the history of endocrinology; that is, a report of work that has been going on for years, being carried out carefully and not reported on until adequate statistics were available. I think that the point needs no elaboration. Those who are at all familiar with endocrinology know this is not exactly the usual way of going about it.

DR. ALLAN W. ROWE, Boston: In regard to the first use of galactose as a test of liver function, Dr. Bauer assumed there should be at least 3 Gm. of sugar in the urine for a positive response. He was, of course, ignorant of what Dr. Allen has termed the carbohydrate paradox, and therefore most of his negative cases were really positive in their response to the sugar. Furthermore, he did not recognize the intrinsic sex difference and used a 40 Gm. dose throughout. The point that I would like to emphasize is that with this assimilation limit, using galactose, we have a differential test not only for all the endocrine glands but also for a large number of nonendocrine conditions, all of which will show changed sugar tolerance. In regard to the kidney permeability in hypopituitarism in which the posterior lobe is underactive, we have observed an increase in tolerance of 200 and 300 per cent, without any evidence whatever of other kidney impairment and with normal chemical reactions of the blood and urine throughout. With appropriate medication, these patients, in a relatively short space of time, have returned to a normal sugar tolerance, retaining an equally unchanged normality of kidney function. In the other direction, the supposition would be that with a hyperactivity of the posterior lobe and an assimilation limit of only 5 Gm. or less of galactose, the kidneys must have increased their permeability from the normal of 40 Gm. to 5 Gm., which is a very large percentage change. Again, those patients that are given appropriate medication, after a suitable lapse of time will show a restoration to the normal assimilation limit without change in the previously demonstrated normality of the kidney function. I think that there are four possibilities to this test: (1) its failure to be absorbed; (2) its retention in the blood stream, which can be shown by blood sugar studies; (3) its combustion, and (4) its power to promote tissue storage and absorption. The question resolves itself, then, into a further statement of the theory of Folin offered a few years ago that there is such storage and absorption. As this test is applied, we are determining only the body's power in some way to absorb and to utilize sugar which is given; but there is a distinct point of transition, shown by this graded dose method, above which the body will not assimilate and utilize all sugar offered and below which it will. The line of demarcation is a sharp one.

RELATION OF AN INDUSTRIAL MEDICAL DEPARTMENT TO A COMMUNITY HEALTH PROGRAM *

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In the discussion of this rather broad subject of the relation of industrial medical work to community health, we must keep in mind, first, that a community health program is not a fixed routine but subject to development and growth. Second, all practicing physicians, consciously or unconsciously, intentionally or unintentionally, are *ipso facto* related to any community health progress, and the larger their sphere of contacts, the more significant is their relationship. Third, no single agency or group in any community is alone prepared or able to do everything that pertains to a community's health needs. Necessarily, certain needs in community health are supplied by private agencies and still others can and should be provided by health work in industry, as will be shown in the progress of this discussion.

MUNICIPAL HEALTH DEPARTMENTS

Community programs have many angles, and no two are alike. First of all there is the municipal health department, whose duty it is to protect and safeguard the health of the citizens. If city governments were more efficient, and if all moneys were properly allocated among important activities and wisely administered, there would be no further need for accessory or private health agencies such as we now have.

So far as I know, there is not in existence a single municipal health department able to accomplish everything. The department usually concerns itself with the more necessary measures relating to communicable diseases, the protection of water and food, and the safety of sanitation. A few cities of the first class not only are giving the usual protection against communicable diseases, but also are attempting through clinics and dispensaries to give diagnosis and treatment; and, what is still more promising, are endeavoring to teach, through various channels, how to avoid illness and premature death.

Most full-time health officers are convinced of the value of child hygiene, and distinct progress is being made in efforts against infant mortality through prenatal, postnatal, preschool and school medical inspection; by such work we have "an excellent illustration of a progressive and broadly conceived plan of attack against causes of illness and death which occur up to the period of adolescence." [1]

Here, unfortunately, most such efforts have ceased. Hand in hand with this protection of child life should go "an equally intense and unrelenting campaign to prevent the causes of disease and death which operate during the period when the child is growing to womanhood or manhood, and during the subsequent period as well. Human life is precious without regard to age, and should be conserved with equal solicitude in all age groups. The army of young persons who enter industry and those in the prime of life, upon whom the family and the community have lavished money and personal care to protect them from disease, in order to prepare them to render service to the community and to the family, are far too often the victims of preventable disease." [1]

The New York City Department of Health in 1915 established, through the efforts of Dr. Louis I. Harris, the present commissioner of health, its first adventure in industrial hygiene. Its chief end at that time was the reporting of occupational diseases by private physicians and by institutions which care for the sick.

Dr. Harris pointed out in 1919 that if communities will be abreast of the needs, "they will establish in their respective departments of health distinctive divisions for industrial hygiene service, in order that the lives and the health of the women and children engaged in industry may be protected from occupational or environmental conditions which are of a hazardous character." [1] Surely a municipality has an obligation in this respect.

COMMUNITY SPECIALISTIC AGENCIES

Much of the present-day preventive work which public health authorities are doing was started by groups of so-called private agencies. These organizations, seeing a need, popularize it, and often eventually "sell" it to the municipal authorities, who then incorporate it into their program.

In New York City, the Beekman Street Hospital is offering a health service to employees of small industrial and mercantile establishments, supplementing the services of examining physicians with the diagnostic facilities of the hospital. Also, the New York Tuberculosis Association is offering diagnosis, hospitalization and follow-up of tuberculosis cases to any firm that cares to avail itself of the opportunity. This has been a service of remarkably excellent character and one which could well be duplicated elsewhere. Philadelphia has had a similar service, and the Philadelphia Health Council has offered for the past two or three years a health service to small establishments.[2] I believe its objective was to demonstrate how it might be done in places where there was a prejudice against its value and where the employer did not feel that his establishment was large enough to warrant a set-up for medical supervision.

Dr. S. S. Goldwater [3] calls these agencies which contribute to a community health program specialistic societies. These comprise such organizations as tuberculosis associations, public health nursing associations, heart associations, and public health committees of such bodies as chambers of commerce, the one in Rochester, incidentally, conducting in conjunction with the board of education "Live-a-Little-Longer" classes for mothers. We have work also for crippled and underprivileged children by lunch clubs and fraternal organizations. It is the function of these societies to see that certain important health needs are given due publicity and properly attended to in one of several ways. In many places such organizations as enumerated work hand in hand with the commissioner of health, who is glad to have their help.

Under specialistic agencies we must not overlook community hospitals with their clinics and dispensaries, rendering a much needed and incalculable amount of

* Read before the Section on Preventive and Industrial Medicine and Public Health at the Seventy-Eighth Annual Session of the American Medical Association, Washington, D. C., May 18, 1927.

1. Harris, L. I.: Industrial Hygiene, New York State J. Med. **19**: 61 (Feb.) 1919.

2. Medical Service in Industrial Plants in Philadelphia, Philadelphia Health Council and Tuberculosis Committee, Memo. Vol. III, numbers 1-12, February 1925; Vol. II, numbers 1-1, August, 1924. Funkhauser, E. K.: Philadelphia Establishes Medical Service in Industry, Nation's Health **6**: 753 (Nov.) 1924.

3. Goldwater, S. S.: Syllabus of Activities for the Protection and Promotion of the Nation's Health, Mod. Med. **1**: 109 (June) 1919.

good. At the Massachusetts General Hospital in Boston there has existed for several years, under the supervision of the School of Public Health at Harvard, an occupational disease clinic. Much good work has been done here in unraveling many ill defined and borderline conditions arising in industry. In Chicago, also, under Dr. Harry E. Mock's guiding genius, an industrial clinic has been in existence for some time at St. Luke's Hospital. Doubtless there have been others. With the increasing amount of industrial disabilities there is need for more such clinics in our hospitals.

To go back to the opening paragraph, the family physician cannot be left out as an agency. He mans the hospitals, clinics and dispensaries, is often the guiding hand in many of the specialistic organizations, does valiant public health duty under the direction of the municipal health officer, and from first to last is an important factor in the health and well being of the individual. It is true that some physicians are more actively interested in preventive community health projects than others. It has repeatedly come under my observation that whenever a practitioner has given of his time and energy, he has profited substantially in more ways than one. I feel that as a part of medical training every student should be urged to do his bit when he gets into practice. It would help immeasurably to have a large majority of the physicians in a community lending their support to all movements for better community health.

So much for what the community has to offer.

INDUSTRIAL MEDICAL DEPARTMENTS

A recent talk with one of the ex-presidents of the American Medical Association revealed a surprising lack of comprehension of the significance and importance of industrial medicine. To be sure, many physicians in private practice and elsewhere do appreciate the extent of the field, but because of an altogether too general lack of knowledge it seems wise to dwell somewhat on its activities. Unless we know something of the plan and scope, no profitable comparison can be made.

Industrial medicine in its real meaning is much more than the patching and mending of injured workers. It is primarily the prevention of sickness rather than its cure. An employer is now compelled by law in practically every state to furnish medical care for those who injure themselves at work, and to do so in the best way possible is good business economy. This naturally impels a consideration of the preventive phase, though laws do not require that the health in general of workers be preserved and developed. Maintaining and aiding their health is a by-product, so to speak, of workmen's compensation laws.

But in what respect, it may be asked, is this work different from the usual practice of medicine and surgery? The practice of industrial medicine is different in that it is specifically applied to the worker, sick or well, in all its relations to industry and to society. It means an interest in his working conditions and his social problems; the taking into account of occupational hazards, industrial poisons, and the physiology of fatigue; the provision of proper lighting, ventilation, seating and rest periods; a knowledge of the best ways of getting those injured back to work with the least disability; keeping tabs on morbidity, and doing everything possible to teach the worker how to live, to prolong his life and keep up his efficiency.

Every contact in the factory with a worker pertaining to his health and welfare can so register that its import will be carried to the home or neighborhood, thereby spreading the gospel of better health. It has always seemed to me that whereas community health concerns itself with protecting the population *en masse* against life-destroying agents, industrial medicine has a personal and intimate contact and influence with the worker.

One of the things which we are trying to promote in industry to augment the community health is the physical examination of prospective or new employees. No industry can be said to have embraced a program of industrial medicine which does not require physical examinations. Examinations of the simplest character have a value, if they are honestly done and have a sincere motive behind them, though of course, the more extensively carried out, the greater their value. Acquainting an individual with his physical status is one of the greatest single instances of profitable public health work. A great deal could be said of this relationship, direct and indirect, to community health. A large amount of good could be accomplished if every industry required a physical appraisal of all its prospective workers. Tuberculosis, syphilis and other conditions could be detected long before they had spent their devastating force.

I can conceive of a community health department providing examinations of all workers periodically, so that when an individual applied for work he could present evidence of having been adjudged a healthy individual. This, I believe, would be in keeping with the present requirement in some instances that young persons must have a physical examination before they are given their working permits. The single instance of requiring that all applicants show a recent vaccination against smallpox, which is in effect in some industries, in itself helps greatly in controlling that one particular disease. How can a municipal health officer reach workers more effectively?

To obtain the greatest value from physical examinations, they should be done annually, although I would be willing to give support to a program which provided examinations every two years. Not many industries have found it feasible to examine every employee every year, but many examinations are made from time to time to determine the cause of alleged illness, or, after illness, to determine ability to resume work. In such examinations the hearts and lungs are checked, the blood pressure is watched and kidney integrity is guarded; the weight, tonsils, teeth and eyesight are gone over; in brief, a general fairly complete survey is made, correctable defects, the importance of diet and other items of personal hygiene being pointed out to the examinee, all of which, as is known, have a tremendous bearing on community health.

Between 1914 and 1927, the Metropolitan Life Insurance Company did periodic examinations on a group of 6,000 policyholders, with a saving of 18 per cent in the expected mortality. The greatest saving occurred at the ages between 40 and 60. "Apparently these policyholders had profited by medical advice" given at the time of these examinations; "in no other way could this favorable showing be explained." Nothing is so convincing to me of the value of periodic examinations as this experience recently described by Frankel.[4]

4. Frankel, L. K.: The Rôle of Life Insurance Companies in Health Conservation Programs, Ann. Am. Acad. Political & Social Science, March, 1927.

Through the educational program, which is quite common throughout industry, many ways of presenting valuable health suggestions are used. The National Safety Council not only furnishes bulletins on accident prevention, but also now supplies those bearing on the prevention of sickness. Usually there is a monthly publication in most industries which offers an opportunity to present the numerous phases of better health and a better understanding of the body and its functions. Plant publications offer a splendid opportunity for giving information regarding such simple but all important fundamentals as water drinking, proper elimination, adequate diet, rest and exercise, together with numerous items pertaining to personal hygiene. "There is a growing demand on the part of the public for information with reference to health," [5] and there is need for more and better health habit articles.

Another method of health education is the holding of health classes for certain groups, such as youthful beginners and those markedly underweight and needing special help. First aid classes as conducted in some of our industries arouse interest in phases of well being in addition to teaching how to care for the injured. Exhibits, too, are of special value, for nothing "gets across" like visual education. Displays of right foods and well balanced meals are aids to a better understanding of eating for health. Exhibits of roentgen-ray films have been used to acquaint workers with ways in which they are used in detecting disease.

Does such educational effort have a bearing on community health? Though the press and periodicals of the day carry much of this sort of thing, it does not have the same force and meaning as when the worker meets it in his place of work. And from there it is more likely to go into the home and reach the members of the family, for the worker naturally explains to the family circle what he has experienced and learned at work. Its influence may be far-reaching. Certainly it is another force in the community, working for a more enlightened public, on matters pertaining to health.

In our organization some of these educational measures have been carried along, hand in hand, with a continuous quest for the discovery of certain diseases and conditions which we know incapacitate and reduce the efficiency of the workers. We are constantly on the watch for infected teeth, diseased tonsils, defective vision, nutritional faults, inadequate elimination, goiter (for we are in the goiter belt), syphilis, tuberculosis (by taking frequent roentgenograms of the chest), and common colds, the cause of a high percentage of lost time from work.

For the past three years we have made it a point to make as many Wassermann tests as possible, on the theory that if we made enough we would uncover a considerable amount of syphilis. In our largest plant more than 5,500 Wassermann tests have been done, with the result that 224 positive cases were found. Dr. B. J. Slater, at the Kodak Park Works, is responsible for this, and he sends more specimens to the city laboratory than any other physician in the community. This indicates in another way how industry may play its part in community health.[6]

In 1921 and 1922, in about 3,000 health examinations, in which a roentgenogram of the chest was made in each case, considerable tuberculosis was found. This convinced us that very little work was being done in the city and that we must tighten up and develop some real case-finding machinery. As a result, for the past five years, through the efforts of Dr. E. K. Richard, we have had the most efficient case-finding and follow-up of contacts that exists in the community, and just now plans are being made whereby our system is to be installed as a city-wide affair. The city health department will have the benefit of something approaching a real control of tuberculosis. This is a real contribution of industry to the community. No one can question the value to the community of such persistent painstaking supervision of a group, and we know that such vigilance spreads to the home, where perhaps it does its greatest good.

Then, of course, we render, as do many other similarly situated industries, a certain number of diagnostic helps. We do a limited amount of laboratory work for the employees and their physicians. Numerous roentgenograms, specialist examinations of certain kinds, advice and interpretation concerning existing conditions are provided; this is always appreciated, and doubtless adds just a little more impetus to the sum total of sincere efforts made by the practicing physician on the outside. Some industries are so located that they find it necessary and possible to do much more than this. A few do practically everything that a well equipped hospital can do. Chest clinics are not uncommon, and in one organization a cardiac clinic is conducted.

"When industry provides diagnostic opportunity for the physician, it makes him feel that his hands are being upheld in such a fashion that he will take more interest and develop more confidence." [7]

How far industry should go in health supervision is ably set forth by Dr. F. L. Rector, editor of the *Nation's Health*, in a paper on this subject given before the National Safety Council last fall.[8] He believes that first aid for illness is just as necessary for injuries, with which we probably all agree. Workers generally will not go to physicians until serious signs of disease appear. Therefore if, through physical examinations and other contacts, diseases can be detected in their incipience, an immense saving can be effected. Furthermore, the average physician cannot give complete diagnostic service for the money which he knows the worker will pay; hence, with the help which industry is able to give, adequate diagnosis is provided, and disease is often caught in its first stages.

"If industry would make provision for such diagnosis, and then insist upon the periodic examination of workers and upon the proper attention by workers to any defective conditions which might be discovered, health improvement of such a group would become so marked as to return to the industry many times any expense which the provision of this equipment may have made necessary." [8]

Of morbidity figures too little is known. Practically nothing is being done by public health officials to secure the registration of all sickness. Perhaps this is not possible at present. Here, however, industry can add something. Through carefully supervised sick benefit schemes, sick workers are visited and their records checked. Through industry, the United States Public

5. Watson, C. H.: Selling Industrial Medical Department Activities, Nation's Health, January, 1927.
6. Sawyer, W. A., and Slater, B. J.: Cost of Syphilis in Industry, J. Indust. Hyg. 8: 317 (Aug.) 1926.
7. Watson, C. H.: Some Aspects of Industrial Medical Practice, Nation's Health, December, 1926.
8. Rector, F. L.: How Far Should Industry Go in a Health Program? Tr. National Safety Council, 15th Congress 1.

Health Service has been able to secure the best available statistics pertaining to this subject. Those interested I refer to the reports of the United States Public Health Service on the subject. Often a sick benefit society is the means of introducing physical examinations to workers, as this is often obligatory for membership.

Not only are we able to secure a record of sickness, but also, through our visiting nurses, we have a means of assisting the worker or his family to proper care and thus sometimes shortening the period of incapacity. We render a personal and family wide contact that is an opportunity for giving service, and again community health is safeguarded.

And then, more subtle but equally effective is the standard which industrial medical work of high quality establishes in the minds of employees. They cannot be satisfied with an inferior grade of medical service.

An ever increasing part of the work of an industrial medical department, assuming that it has gained the employees' confidence as it should, is the advice asked regarding physicians, hospitals, the cost of operations, and the like. Explaining a physician's statement or diagnosis, or relieving a misunderstanding or doubt, goes a long way toward making for peace of mind. Over a period of seven years we have seen a distinct lessening in the number of employees patronizing quacks and unreliable physicians and depending on "patent medicines" and home treatment, when they should be making sure just what is wrong and placing themselves under the supervision of a competent physician. A clearing house for medical information and advice is a real need of every community.

In 1926, in one industry of 10,000 employees, there were more than 100,000 contacts. This meant an average of ten contacts per worker. The health department in the same city, with a population of slightly over 300,000, had about 1,600,000 contacts, or five per capita, and this is an active health department. A large proportion of these contacts are with the children—a most natural place to begin a constructive public health program. Now the advantage of industry in personal contacts is not only the larger number but the more individual and personal quality of such relationships, and with it the opportunity to check back and follow up. Last, but not least, there is also the advantage of the influence of the industry with the individual. He will do certain things because his employer says so that he would not do for a city official—and most people need some one to help them to make up their minds.

Dr. Edgar Leigh Collis of the University of Wales says that "industry, which gathers adults together, provides the means for bringing preventive medicine into direct personal contact with the adult. If the industrial part of the adult population were sound in health, there would not be need for much else." [9]

Thus we can agree that for those of working years nothing has the possibilities of influence for good that industry has. Such being the case, is there not a program of cooperation possible between industry and local health departments? Could a municipal health department afford, so far as results are concerned, to help industries, large and small, to inaugurate the right kind of medical or health work? Many business houses would cooperate in such a plan if city health departments were to do a proper share. Would it be to the advantage of community health to do this? I think so. In fact, the business world, to my mind, is the last frontier with respect to the accomplishment of better individual health.

It is too slow a process to persuade people that they should correct impairments, pursue better habits and thereby enjoy better health. I believe that it can be done by the slow process of education; but with the pressure that the business world can supply, it will come much faster and more certainly. Economic pressure is a powerful persuader, and I believe that its use is permissible when it is definitely for the best good of the individual. If we learn by experience or common knowledge that there is no job worth while, and certainly no advancement possible, without good health, we will see to it as far as possible not only that our own health is all it might be, but also that the health of our children is preserved and directed properly. We will know that we cannot take any chance.

All through the workaday world there are preventable or correctable human liabilities, doing half-heartedly and ineffectively jobs which should be done thoroughly and efficiently. These individuals should be made to know that they can be put into condition to do a higher quality of work, and that without a spirit of cooperation there is no chance ahead of them. The worker must be held somewhat responsible for his ill health. I stress this because I have seen it tried out in part, and I know that often it is the only thing which works. It benefits most the individual who is forcefully persuaded to heed the advice given, and in the end he is glad. Commerce has such a grip on all our thinking and standards of judgment that health from the business point of view is bound to present itself in an increasingly convincing way.

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9. Collis, E. L.: Importance of Industrial Medicine to the Community, Lancet 2: 487 (Sept. 3) 1921.

ABSTRACT OF DISCUSSION

DR. LLOYD NOLAND, Fairfield, Ala.: Dr. Sawyer has certainly sounded what, in my opinion, is the keynote of the progress of the relation between the organized health agencies of the states, counties and cities of the country and those of industry. Industry has realized within the last twenty years that conservation of the working forces is absolutely necessary. An age of specialists is before us, and an age of shortage of labor, the development of skilled labor and a definite shortage of unskilled or common labor. With this realization, many of the great industries have developed to a more or less extent their health departments for the handling of the injured. First aid for illness is the next step, and is being rapidly developed. Unless one has been thrown into contact with the worker in mass, it is rather hard to realize the utter inability of the average workman to employ skilled medical help. Certainly, he never calls for medical help until, in his opinion, it is absolutely necessary. We believe today that if first aid for illness can be furnished to the worker and to his family, more can be done for the protection of the public health than in any other possible way. In Alabama we have, perhaps, carried that first aid to the workman a little further than has been done in many other places. It is a success from the standpoint of labor and the industries. In one organization employing approximately 25,000 men, in ten years the labor turnover has been cut from about 190 to about 20 per cent. That in itself pays. There is no question about it paying, and industry realizes it. With regard to the contact between the state and county and city health departments, in Alabama it is about as fine as it possibly could be. We are working together in utmost harmony, each agency accepting the good work or attempted good work that the other is doing. It is an ideal situation from the standpoint of the public health. Too close a contact between the state, county

and municipal health departments and the health departments of industry can hardly exist.

Dr. L. W. Corbett, Goldsboro, N. C.: Here is an idea of how to get the general public in closer contact with the physicians and at the same time give the physicians a little credit for the amount of charity or so-called charity that they are doing. Let the county medical society go on record as giving to the community chest any amount that they see fit, that amount to be paid in services rendered to the public. Delegate the executives of public welfare bureaus in the county to issue orders for the treatment of patients who are not able to pay. Such a donation would serve a double purpose. A good many dead beats would be eliminated. They would put up the cash rather than call on the secretary of a charity organization to secure a note authorizing a physician's services. Worthy charity patients would be served and the physicians would receive the community credit for this charity, which they now do, but for which they receive no public recognition. It must be understood, however, that the secretary of the charity organization will make a record of the charity calls ordered, and balance these calls against the donation of the medical society.

Dr. F. L. Rector, Chicago: There is just one thing I want to emphasize about Dr. Sawyer's paper. I thought that some might feel that he had in mind the possibility of an all-inclusive program on the relation of health work in industry to that of the community. I do not think he intended that at all. I do not believe that one can put over a superimposed program of public health or industrial health, any more than one can a superimposed program of any other sort. What will work in Rochester, N. Y., will not work in San Francisco, and what will work in Atlanta, Ga., will not work in Seattle. One has to consider one's industrial work and one's relations with the community—the same conditions of which one must think when working with a generalized public health program. Out in the Far West and in the South, I think we will find that it is a fairly common practice for the employee to contribute to his health work on a monthly basis, or a fifty-fifty basis between the employer and employee; while in this part of the country and north and east of here that method is almost entirely unknown. If one tries to transplant the Atlantic Coast and New England methods to the South or West one would get into trouble, and likewise if one undertook to transplant those methods to this part of the country, one would encounter opposition. It is a case, as I see it, of studying the local program and the local situation in order to determine what sort of program one is to put into effect.

Dr. G. H. Wood, Detroit: Preventive medicine is very attractive and alluring, especially to the industrial physician who has an opportunity of doing things on a larger scale than has the ordinary general practitioner. I think we are sometimes led too far by this fascination. There is a question of justice, a question of contract involved in this problem, of which we ought not to lose sight. There is the matter of contract between the physician and the individual treated, or his representative. I question whether the employer has really a legal right to make a contract with a physician to do all the medical work for an employee. It is an American right to choose one's own physician. It may be self-evident that it is up to the medical department of an industry to prevent, as far as possible, all accidents and industrial diseases which are caused by the industry, either per se, as poisoning from chemicals used, or incidentally, as illness from insanitary working conditions; but when it comes to the individual's personal life there is a serious question. If the industry takes that over, where does the family physician come in? We often hear criticism of the family physician for not looking after his families better. How is he going to look after them if we industrial physicians take them away from him? This is a serious question, and I think we ought to consider it very carefully and go slowly in deciding it. I am not advocating here, today, any ideal. That is hard to find. The nearest that I have been able to come to satisfying myself that there can be a harmonious arrangement, allowing equal justice to all, has been in considering the suggestion made by Dr. Rector in a masterful address which he gave before the National Safety Council in Detroit last fall. He there suggested the idea of the industries furnishing the expensive necessities for complete examination, such as roentgen-ray apparatus and other laboratory devices, which the family physician is often unable to command on account of his patients not having the money to pay for them. I think something of that kind, with the cooperation of the industrial physician with the family physician, might work satisfactorily. Let the family physician always be uppermost; let the industrial physician put himself not on a conspicuous platform but in the position of a helpful, friendly consultant to the family physician, and let the industry furnish some of the expensive requirements for good preventive medicine. I think, perhaps, that that would be the nearest we can come at the present time to an ideal.

Dr. Volney Cheney, Chicago: The medical department of Armour & Company was primarily established to take care of injuries, but it has developed gradually into a department caring for medical cases. We sold ourselves to the employees, and we found that they were consulting us more and more about their physical ailments as well as their injuries. We gradually extended that service. We had the equipment; we had the necessary organization to handle those cases and also the time, and we gave it to them, and we gradually extended our medical influence to the families of the employees. I have always contended that the service of the medical department of an industry should be fraternal and not paternal; that is, it should render a friendly medical service. We give the employees medical advice; we examine them; we examine the members of the family, but we do not offer to treat them; we cannot do it. We cooperate thoroughly with the members of the medical profession in our community. We give the data which we obtain by this examination to the patients, and tell them to take it to their medical adviser or their physician. In that way we cooperate. In the past year our accident cases numbered more than 8,000, and our medical cases more than 10,000. That does not include the services rendered to the members of the employee's families, which included more than 2,000. We encourage that point of contact, because we want to sell ourselves to the employees, and we can sell ourselves through their families sometimes quicker than we can directly to the individual. We have a children's clinic. We are anxious to have the children brought in, because we feel that potentially they are employees of Armour & Company, or will be; in fact, a great many families have been employed by Armour & Company for a large number of years. I think that in this way we are a very important factor in the community health. We teach health through our local papers—that is, our organization papers, two of which we have. We have articles on health. To my mind, we are not treading on the toes of the community physician. We hold a very close association with him. We have membership in the Stockyards Branch, where we come in contact with the physicians in our meetings, and we tell them that if an Armour patient comes under their care, we are glad to cooperate and extend to them or to the patient the full facilities of our department, as many of our employees cannot afford roentgen-ray and laboratory facilities.

Dr. S. W. Welch, Montgomery, Ala.: I do not feel like allowing the opportunity to go by without expressing my appreciation publicly of the work which the industrial corporations of Alabama have done and the contribution which they have made to the control of communicable diseases in Alabama. In 1917, the death rate from typhoid was between 45 and 50 per hundred thousand. It has fallen now to 17. The high death rate is not in the centers of population where the industrial corporations operate, but in the small towns of between 500 and 1,000, where we have a death rate of 54, and in the centers of population less than 1 per hundred thousand—that is, in towns the size of Birmingham and between that and 25,000. This definitely shows that the cooperation of these industrial corporations with the state boards of health has reduced typhoid in those areas to a minimum. The same thing is true of malaria. The death rate from malaria in 1917 was above 20—about 23, I believe—and at this time it has fallen to 8 per hundred thousand. That has been largely due

to the contribution which has been made by the cooperation of the corporations of the state. I was struck by the suggestion of Dr. Rector that we could not have the same plan of cooperation between the medical profession in all sections of the country. In Alabama, we have contracts. As far back as 1890, the Medical Association of Alabama recognized the right of physicians to make contracts with industrial corporations for the care of their operatives, including both the laborer and his family. That was limited to the laborer of limited means and small salary; it did not allow the officials of the company or the high paid skilled laborers of the company to take advantage of it. That has worked well in Alabama. There has been some friction among the medical men of the Birmingham district in Jefferson County, but it has been not with the contract itself but in the abuse of the contract. Contracts, per se, are entirely ethical. It depends entirely on whether or not the spirit of the ethics of the medical profession is kept in that contract, and I don't see any way in the world to make a law that would make one man honest in the keeping of his contract by legal measures. That is a question of the integrity of the individual, and all of us know what ethics is. I was very much interested in that experiment in social service in North Carolina. That is an experiment worth trying in all rural sections of the country. We need something like that to arouse the confidence of the people in the medical profession.

DR. JOSEPH S. LAWRENCE, Albany, N. Y.: I failed to hear as much as I would like to have heard about the relation between the industrial surgeon or industry and its medical service to the practicing physician in the same community. I happen to be acquainted with a district where a large industry employs above 50 per cent of the population, leaving a small portion of the persons in the community with no claim on the industry for their medical care. Among those are the municipal employees, school teachers, merchants and a few others, a group too small and too healthy to support a physician of themselves. Physicians who have located there have left after a while because they could not support their families on their earnings. Further, what provision is made by industry to care for the man who loses his position with the industry? We speak of the facilities that industry can offer the practicing physicians of a community. True enough, but then the physician must be related to that industry; otherwise he cannot get those advantages. In the case of a young physician just graduating from a medical school and taking up his residence in a district where there is a large industry with many facilities, his problem of getting a foothold in that community is increased because of the competition which he is obliged to enter into with the men already established, who are privileged to use the industry's medical and surgical facilities. One of the most difficult features today in securing a start in the practice of medicine is the financial involvement which is necessary in order to get the equipment. We are all thoroughly familiar with that, and I am bringing these points up only because Dr. Sawyer did not, as I thought, give them sufficient consideration in his paper.

DR. W. A. SAWYER, Rochester, N. Y.: I want to emphasize again that this subject is a very broad one and may be discussed from many angles. I tried to adhere to the relation of industrial work to a community health program. I left out the physician to a very large extent because that is a subject in itself. I do not feel, in my own work at least, or in the work that I have seen generally throughout industry, that very much is being taken away from the practicing physician. On the other hand, work is more often given to the practicing physician, and I think men who are engaged in industrial work will bear me out in that statement. In most communities where the work is of the right kind, there is a very good relationship between the physicians of the community and the industry. Dr. Lawrence has brought up some very important points. I do not think that we can settle them, however, in just a few words. Dr. Rector has emphasized some interesting points, and in his paper, which is to be presented at the Illinois State meeting, he is going to discuss specifically the relation of industrial medical work to the private practitioner.

THE DIAGNOSIS OF TUBERCULOSIS IN THE CHILD'S CHEST *

KENNON DUNHAM, M.D.
CINCINNATI

[EDITORIAL NOTE.—This paper, together with that of Drs. Gittings, Lathrop and Anderson, which follows it, concludes the symposium on pulmonary and bronchial gland tuberculosis. In our last issue we published the papers of Drs. Opie, Hempelmann and Burhans.]

The diagnosis of tuberculosis in the child's chest is easy when tubercle bacilli can be found in the sputum, when the roentgen-ray chest plates show markings similar to those of adult tuberculosis, or when physical signs similar to those heard in cases of adult pulmonary tuberculosis are found. But in such cases the diagnosis is made too late; the child will almost surely die.

There are many reports and much writing which, when boiled down, state that a combination of all or several of the following observations establishes the diagnosis of tuberculosis in a child: a tuberculin reaction; a roentgen-ray chest plate showing calcification and large lymph nodes, especially with heavy trunks; parasternal or intrascapular dulness, and a d'Espine sign extending below the third dorsal spine. If there is a history of exposure, a low grade fever, a rapid pulse and loss of weight, then the diagnosis is complete.

One observer will emphasize the difference in the size of the pupils, another will emphasize enlarged cervical lymph nodes, while another will emphasize enlarged supraclavicular lymph nodes. My good friend Dr. Riviere emphasizes dulness over the right back between the spine and the scapulae. Dr. Dunham of New Haven has shown that some children have large calcified nodes in the abdomen which can be demonstrated by the roentgen ray.

It is my opinion that, when there is a history of exposure, rapid pulse, low grade fever, underweight and poor nourishment, there is every reason to act without waiting for further observations on which to base a definite diagnosis of tuberculosis. Such a child at any age under 12 is "potentially tuberculous" and should be so treated; i. e., with complete bed rest, correct nourishment, open air, all infection removed and all deformities corrected. This treatment should be continued until the child has no fever and the weight is above average.

I will go further and recommend that such children should be so treated, whether they have a history of exposure or not, because many of them are infected from unknown sources. All such children are of course infected and many of them with tuberculosis.

In a nutshell, this is my answer to the long discussion of the diagnosis of tuberculosis in the child's chest: Do not wait until the existence of pulmonary tuberculosis can be proved; then it is too late. Physicians and nurses should make the statement that the child is "potentially tuberculous" and treat that child accordingly.

Taking up the recognized methods of diagnosis singly, there is, first, tuberculin. It has been my experience that often the healthiest child, the child that will grow to full manhood without developing tuberculosis,

* From the Medical Department, University of Cincinnati College of Medicine, and the Cincinnati Tuberculosis Sanatorium.
* Read before the Section on Diseases of Children at the Seventy-Eighth Annual Session of the American Medical Association, Washington, D. C., May 19, 1927.

has frequently given the most positive tuberculin reaction. Who would subject a well nourished, healthy child to the "cure" just because he gave a positive tuberculin reaction?

Secondly, the roentgen-ray plate is no better. Some of our healthiest children show definite calcification in the hilum and bronchial lymph nodes. Many children with repeated head colds show enlarged bronchial lymph nodes. Such children can be put to bed, but if the infection in the head is not cleared up they will not remain well. All the physical signs commonly attributed to early pulmonary tuberculosis in the child were found by the commission appointed by the National Tuberculosis Association to be very common in the chest of the healthy child.

The value of the tuberculin reaction, Dr. E. C. Dunham's calcified lymph nodes below the diaphragm, and the studies of Drs. Opie and McPhedran of calcification within the lymphatic system of the thorax, were not discussed by this commission.

Dr. Opie's most valuable pathologic and roentgen-ray studies do prove that many of our children are infected by the tubercle bacilli before they are 10 years of age, and that the greater the chance for exposure the greater the evidence of infection. They do not prove that the roentgen ray is an adequate means of diagnosing this infection at a time when it will be a valuable aid in treating the child examined.

I concur in the conception of "tuberculous infection in children and adults" as expressed by Dr. Opie in the May number of the *Journal of the Outdoor Life*. But I again repeat that the children who give a positive tuberculin reaction and who show calcification on their roentgen-ray chest plates do not all need to be treated for tuberculosis, and that this group does not contain nearly all the children who should be so treated.

Dr. E. C. Dunham's studies have taught us a new method of securing evidence of previous tuberculous infection. From this evidence we may suspect that tuberculosis is causing a given group of symptoms, but again there is no proof that will justify a diagnosis of active tuberculosis in a given child. Further, I have been able to find this evidence in only two cases in the last year.

We frequently see, on the roentgenogram of a child, enlarged lymph nodes without calcium, associated with unresolved pneumonia or bronchopneumonia. A flat diagnosis of tuberculosis is not justified, but such children should all be treated as if they were tuberculous until their condition is above par.

There is one roentgen-ray density that I consider of great clinical importance—the caseocalcareous lymph node. This is an enlarged tracheal, bronchial or pulmonary lymph node which shows flakes of calcification in its circumference. Many of these have been removed, roentgenographed and cut. They uniformly show calcification with caseation. They can be detected on the roentgen-ray chest plate especially if lateral plates are taken. Such a density suggests caseation associated with beginning calcification, and thus the process is not arrested. This finding is definite but not seen often enough to solve this all-important problem. Much of the calcification that is seen on the chest roentgenogram is evidence of infection but does not require treatment because it is arrested.

These cases do not give physical signs because the lesion is not in the pulmonary tissue but in the lymph nodes or in other parts of the body. Some of these cases later develop basal lung lesions, but not the fibroid apical type with characteristic "fans" on the roentgen-ray chest plate, positive physical signs or tubercle bacilli in the sputum, except very late in the course of the disease.

For many years I have been studying this riddle. My conception of the pathogenesis of this infection may not be accepted, but the practical approach to the problem seems to me very simple and compelling.

My studies certainly prove that the roentgen ray will not furnish adequate diagnostic aid in the vast majority of cases; that other laboratory tests are also inadequate, and that the physical observations previously mentioned as being associated with tuberculosis in the child's chest are too commonly found over the lungs of healthy children to be reliable.

These observations are negative because the disease, at a time when it can be arrested, is in the lymph nodes and not in the pulmonary tissue. When roentgen-ray observations are adequate and physical signs are convincing, the disease is in the lung and then it is so advanced that the diagnosis is too late; the child dies.

I urge that we act before a definite diagnosis of tuberculosis can be proved, while the disease is in the lymph nodes and before it has become general and the lung is involved.

Careful treatment over a long time will usually prevent this involvement, the lymphatics system will protect the general system, the infection will be arrested, and the child will develop immunity rather than disease. We cure the child and increase its protection. Colored children do not do so well. I have seen the disease become general while the child was taking the cure at the Cincinnati Tuberculosis Sanatorium. This is very unusual in a white child under similar care.

To me this treatment seems rational and worth while. In practice it has given wonderful results. In some patients whom I have watched regain health, I have found small calcified flakes scattered over a portion of a lower lobe. This proves that there was a basal tuberculous infection, although I did not have proof of this until the disease was arrested.

This demonstrates what I consider the greatest value of the roentgen-ray plate in studying children's chests; namely, an accurate study of the changing densities both during treatment and long after apparent recovery. From such studies we learn, and the patient is more likely to be led to full recovery.

I recommend that in practice we aim to make a diagnosis of a "potentially tuberculous child" rather than a "tuberculous lung"; that we encourage our nurses to find such cases by their history of exposure, their underweight and undernourishment, and that when found, their family be taught the necessity of starting treatment promptly and energetically.

The nurse can select the case, but only an able, farsighted and devoted physician can force the family to provide complete bed rest, adequate nourishment and open air, and further to allow the physician to remove all infection and correct all deformities. It is most difficult to have the treatment continued until the child's condition is far above normal.

If my recommendation is followed, some children who did not have tuberculosis will have been treated, but all of them will have been prevented from the probability of developing tuberculosis, and tuberculous infection will have been arrested in most of them.

Union Central Life Building.

TUBERCULOSIS IN CHILDHOOD

PROGNOSIS, PROPHYLAXIS AND TREATMENT *

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Next to treatment, prognosis most intimately concerns the patient; and yet, of all the subdivisions of medical study, prognosis lends itself least to scientific precision.

In the case of tuberculosis, one of the chief reasons for this is the lack of sufficiently numerous data, gathered after observation sufficiently prolonged. When the active stage has been estimated as lasting from five to twenty years on the average, it is not hard to explain the deficiencies.

The general practitioner, who may follow patients from birth to death even in the third and fourth decades, has material at hand for valuable observations but usually lacks time or inclination to put them on record.

For some years, certain general conclusions as to the prognosis of tuberculosis in early life have received wide acceptance. These may be epitomized from an article by Nassau and Zweig.[1]

When infection occurs in the first three months of life, prognosis is absolutely bad and death usually occurs in the first six months. Of those infected in the first nine months, four fifths usually die; but infants infected in their first year who survive their second year show a relatively good prognosis.

After infancy, prognosis becomes more difficult. If a child is infected after the sixth year and this is immediately followed by pulmonary disease, prognosis is unfavorable. A long period of latent tuberculosis preceding an acute attack improves the outlook. Patients who develop tuberculids of the skin show a high mortality. Recurrent phlyctenules rarely are followed by pulmonary tuberculosis. To these conclusions may be added that after tuberculous cervical adenitis, also, pulmonary involvement is relatively uncommon.

Wallgren [2] could not find any experimental evidence to show that young animals are more susceptible than older ones, provided the infecting dose is measured. He believes that the serious results of tuberculosis in early life are due mainly to the opportunities for massive infection which are entailed by the infant's dependence on adults.

It is well recognized, however, that mortality from tuberculosis has been decreasing for the past seventy-five years. This holds true for children as well as for adults. For example, Stern,[3] in gathering statistics in Alsace-Lorraine from 1905 to 1912, found a decrease of 7.5 per cent in the death rate for tuberculosis of childhood. The distribution of percentage decrease was: First year, 13.3; second year, 9.6; third year, 4.8; fourth and fifth years, 8.9; sixth to tenth years, 4.4, and eleventh to fifteenth years, 2.2. The greater decrease in the first year he attributed to propaganda and the better care of nurslings. That the period from 11 to 15 years showed the smallest decrease corresponds to the increase in mortality which is prone to occur in that period, as Hess [4] and others have pointed out.

An accurate estimate of morbidity is not available. Perhaps a survey of the inpatients in a children's hospital clientele may give some idea of incidence.

From 1907 to 1926, inclusive, 31,068 patients have been admitted to the Children's Hospital of Philadelphia, and of these 681 have been diagnosed as having pulmonary, pleural, hilum or meningitic [5] tuberculosis. If the period is divided into two decades, the statistics for this group may be presented as shown in table 1.

TABLE 1.—*Incidence of Tuberculosis in Patients Admitted to Children's Hospital*

	Admissions	Tuberculous Cases	Percentage of Tuberculous Cases
1907-1916	14,040	308	2.19
1917-1926	17,028	373	2.19

In view of the greater accuracy in diagnosis which followed the use of tuberculin skin tests, more frequent roentgenologic studies and lumbar punctures, factors which have operated chiefly since 1917, it would seem probable that the morbidity from tuberculosis among the children of Philadelphia certainly is not increasing.

GENERAL FACTORS INFLUENCING PROGNOSIS

Heredity.—Following the realization that infection and not heredity causes tuberculosis, there is a growing belief that a tuberculous ancestry may increase resistance to infection. The vulnerability of uncivilized tribes when first exposed to tuberculosis and the resistance to the development of the disease found among the Jewish race, for example, are often quoted in support of this belief. McCarthy,[6] in 1912, summarized the deaths from tuberculosis among various races in the United States and elsewhere, as shown in table 2.

TABLE 2.—*Deaths from Tuberculosis*

	Death per 100,000
American Indians (9 reservations)	2,800
Negroes (1900 census)	750
Chinese (city dwellers)	700
Irish (1900 United States)	400
Japanese	300
Scandinavians	280
Italians	220
American whites	210
Polish Jews	170

Drolet,[7] among 1,234 children of tuberculous parents or grandparents compared with 461 children of nontuberculous stock, found better results in treatment when there was a history of parental tuberculosis. His conclusion is that these children actually inherit from their parents resistance rather than predisposition to tuberculosis.

That nature tends to protect the unborn child, even at the expense of the mother, is indicated by the studies of Debré and Laplane,[8] who found in 127 families in which the mother was tuberculous that the proportion

* From the Department of Pediatrics, University of Pennsylvania School of Medicine.

* Read before the Section on Diseases of Children at the Seventy-Eighth Annual Session of the American Medical Association, Washington, D. C., May 19, 1927.

1. Nassau, E., and Zweig, H.: Ztschr. f. Kinderh. **39**: 484 (July) 1925.
2. Wallgren, A.: Tubercle **2**: 481 (Aug.) 1921.
3. Stern, E.: Ztschr. f. Tuberk. **24**: 436 (Nov.) 1915.
4. Hess, A. F.: Tuberculosis in Children, J. A. M. A. **72**: 83 (Jan. 11) 1919.
5. These are included because practically all suffer from tracheobronchial tuberculosis also.
6. McCarthy, F. P.: Boston M. & S. J. **166**: 207 (Feb.) 1912.
7. Drolet, G. J.: Am. Rev. Tuberc. **10**: 280 (Nov.) 1924.
8. Debré, R., and Laplane, L.: Nourisson **10**: 249 (July) 1922.

of normal new-born babies was as high as in nontuberculous families, except when the mothers were suffering from grave and progressive lesions. Premature delivery occurred in 43 per cent of these severe cases, with the result that the infants were correspondingly below the average full-time birth weight.

Cobbett[9] believes strongly in racial resistance and also in racial susceptibility due to hereditary factors deeply fixed in the blood of each race. To racial resistance must be added individual immunization when a nonlethal dose of infecting organisms is implanted.

Environment.—Opinion is unanimous as to the influence of environment on the incidence of tuberculous infection. An infant or child in constant association with an open case of tuberculosis rarely will escape infection if the association is intimate and sufficiently prolonged. There is also reason to believe that, although a primary nonlethal infection may provide a stimulus to resistance, this is not always sufficient to protect even during the period of childhood. Repetition of infection, as well as the size and virulence of the initial dose, are important factors in prognosis.

Nutrition.—Obviously, the state of the nutrition cannot have any influence on the implantation of the tubercle bacillus; but the belief is widespread that undernutrition favors its development. This is corroborated by the experience in Germany and Austria during the World War when a state of semifamine was at once followed by a marked increase in the death rate from tuberculosis. Other factors, such as overwork and worry, may have played a rôle, but malnutrition in all probability was a most important factor. It is noteworthy also that the dietary deficiency involved chiefly the fats.

It has been the observation of one of us (J. C. G.) for many years that very rarely will a child develop clinical tuberculosis who consumes a generous amount of mixed fat in his diet. Vaile[10] has had the same experience, and advises insistence on the child's eating fat and suet liberally and frequently. In tuberculous families in which this has been carried out, he reports that further cases of tuberculosis have not developed. Happ and Wagner[11] also found that the addition of cream to the diet hindered the development of tuberculosis, while a fat-free diet favored it. They ascribe this influence to vitamin A.

Cobbett[12] predicates an affinity of certain organs or systems for some particular kind of fatty food, which food happens to resemble in its chemical affinities the fatty part of the tubercle bacillus. A liberal supply of fats, or of some particular kind of fat resembling that of the bacillus, will satisfy the demand made by the susceptible organs and, in proportion to the extent that the demand is met, by so much will the tendency of the organs to annex the tubercle bacilli be diminished.

From the experimental standpoint, however, Jaffe and Levinson[13] found that the feeding of oil, of cholesterol and oil and of egg-yolk did not render animals more resistant to tuberculosis.

Granting, as we may, that fatty foods tend to provoke a gain in weight, the practical fact remains that many children, particularly those with poor appetite and consequent malnutrition, are unable to digest and assimilate even normal amounts of fat, particularly cow's milk fat. The time-honored use of cod liver oil certainly can be understood, since it may be better tolerated than cream.

SPECIFIC TESTS IN REGARD TO PROGNOSIS

Debré, Paraf and Dautreband[14] believe that the prognosis of tuberculosis in infants can be determined by the length of time between infection and the appearance of a positive tuberculin reaction; namely, the antiallergic period. This can usually be ascertained by a series of cutaneous tests at regular intervals, begun as soon as it is known that an infant has come in contact with a tuberculous person. Clinical facts and animal experimentation have shown that infection with massive doses of tubercle bacilli causes a short antiallergic period, whereas small doses produce a long antiallergic period. A short antiallergic period, therefore, always means a massive infection, which is followed by a fatal tuberculosis, and a long antiallergic period signifies an infection with few bacilli and a benign course. The tuberculin test usually becomes positive at the time of the appearance of clinical symptoms.

Using a uniform dose of tuberculin by the Mantoux intradermal method, and repeating it every fifteen days, Combe[15] infers that, if the reaction becomes more marked, the tuberculous lesion is increasing and more tuberculin is being secreted. If the reaction diminishes, either less tuberculin is being formed or the organism is producing more antibodies which unite with the tuberculin. A single reaction does not give any indication as to prognosis, no matter how mild or severe the reaction may be.

PROGNOSIS IN PULMONARY TUBERCULOSIS

Interpretation of the statements found in the literature relating to prognosis in pulmonary tuberculosis rests very largely on the stage of the disease at which the patients were first seen, and on the diagnosis.

Ghon's demonstration at autopsy of the small primary lung focus in such a large percentage of cases of tuberculosis has been amply confirmed by improved roentgenologic technic. Opie and McPhedran[16] estimate that it requires approximately three years for sufficient calcification to occur to render the small discrete lesions demonstrable by roentgen rays. During all this time the patient often is in good health without positive signs of infection except the positive tuberculin reaction. In these patients the inevitable involvement of the tracheobronchial nodes usually is of more clinical significance than the pulmonary lesions and yet, literally, pulmonary involvement is present. At this stage, certainly, a majority of these patients are curable.

On the other hand, when lesions are present in the lung itself which are easily demonstrable on physical examination and which are accompanied by such characteristic symptoms as cough, fever, loss of weight and asthenia, they will become completely and permanently healed in comparatively few patients. Under 2 years of age, the percentage of recoveries will be almost nil.

The difficulty lies in diagnosis, because of the frequency of nontuberculous interstitial disease of the lung which is encountered nowadays. Even a positive tuberculin test is not conclusive, and only the presence of tubercle bacilli in the sputum will settle the point in

9. Cobbett, L.: Tubercle **6**: 577 (Sept.) 1925.
10. Vaile, W. B.: Lancet **1**: 72 (Jan. 8) 1927.
11. Happ, W. M., and Wagner, R.: Ztschr. f. Kinderh. **35**: 127 (April 16) 1923.
12. Cobbett, L.: Tubercle **6**: 7 (Oct.) 1924.
13. Jaffe, R. H., and Levinson, S. A.: Am. Rev. Tuberc. **11**: 175 (May) 1925.
14. Debré, R.; Paraf, J., and Dautreband, L.: Ann. de méd. **9**: 454 (June) 1921.
15. Combe: Nourisson **4**: 202 (July) 1916.
16. Opie, E. L., and McPhedran, F. M.: Am. Rev. Tuberc. **14**: 347 (Oct.) 1926.

some doubtful cases. Their presence in a child under 6 years of age has always been associated with a fatal outcome in our experience.

Not a few very favorable reports of recovery from pulmonary tuberculosis appear in the literature. For example, Oldenburg [17] publishes the results of the sanatorium treatment of 120 children under 4 years of age with pulmonary tuberculosis. Of thirty-seven children below 2 years, twenty-five were cured, two improved and ten died. Of eighty-three children between 2 and 4 years of age, thirty-seven were cured; thirty-one improved; five did not improve; two became worse, and eight died. Later results were studied in 105 children. Sixty-four per cent remained well six years; 20 per cent died within the six years, and no information could be obtained regarding the remaining 16 per cent. In such a series, the criteria for diagnosis must be closely scanned before we can admit that 67 per cent of pulmonary tuberculosis under 2 years is curable.

Our belief is that nontuberculous pneumonia in conjunction with a mild or quiescent involvement of the tracheobronchial nodes often is interpreted as a tuberculous pulmonary lesion, and that careful and repeated studies of the sputum are essential for correct diagnosis. This recalls an order issued by the Surgeon General during the war that soldiers should not be diagnosed as having pulmonary tuberculosis unless tubercle bacilli could be found in the sputum, on account of the confusing picture caused by streptococcal infection of the lung.

PROGNOSIS IN TUBERCULOSIS OF BRONCHIAL NODES

Nodal involvement accompanies every tuberculous infection of the lung. Opie and McPhedran have found that, when the nodes become sufficiently calcified for absolute identification, the history of the patient shows an average duration of contact with tuberculosis of four and one-half years. In a large number the duration was less; in others much more. This would mean that many instances of hilum disease could not be positively recognized much before the fifth year.

Of course, this does not deny the existence of tuberculous adenitis, for caseation of nodes is found in most patients dying of tuberculosis meningitis under 2 years of age. That definite tuberculosis of the tracheobronchial nodes alone can be recognized in early life is the point at issue.

As a rule, diagnosis has rested mainly on the evidence of the roentgen-ray examination. Until calcification occurs, McPhedran believes that identification of tuberculous nodes is difficult or impossible. Granting that his contention is correct, it is clear that an active tuberculous involvement of the nodes, without active lesions of the lungs, which first clearly manifests itself at 5 years, will give a fairly favorable prognosis, because the period from 5 to 10 years marks the lowest mortality rate for tuberculosis in children.

If the primary lung focus heals, as it so often does, and if the child can be protected from repeated infections, the disease in the nodes probably heals in many instances. Repetition of lung infection with coincident insult to the nodes is the factor which determines in large measure the course of many cases of nodal disease, just as it does in the case of the lung.

Were it not for its tendency to give rise to widespread tuberculosis through the blood stream, tracheobronchial disease might be almost as innocuous as mesenteric involvement.

For example, MacGregor,[18] in forty-two autopsies in children from 4 months to 10 years of age, found the following distribution of nodal disease: cervical nodes, two cases; thoracic nodes, twenty-one cases; mesenteric nodes, twenty-two cases. Of the twenty-one thoracic cases, eighteen ended in death from miliary tuberculosis and meningitis, while in only three of twenty cases of the mesenteric group which were not associated with thoracic disease had a general dissemination occurred.

Of 165 children under treatment at the Derbyshire Sanatorium between 1918 and 1923, Watt [19] found 117 between 7 and 15 years of age to be suffering from hilum tuberculosis, and forty-eight between 8 and 15 years old to have what he calls adult types of pulmonary tuberculosis. At the time he made his report in 1924, of the 117 patients only one had died; ninety-seven were quiescent or improved; twelve were worse, and seven could not be traced or were unrecorded. Of the forty-eight patients, eighteen had died within an average period of three years; twenty-one were quiescent or improved, seven were worse, and two could not be accounted for. Incidentally, 48 per cent of the hilum cases and 77 per cent of the adult types showed tubercle bacilli in the sputum. It is noteworthy that these children were over 7 years of age, and in a sanatorium under good hygienic conditions where, presumably, reinfections were not permitted to occur.

Chadwick [20] also emphasizes the comparatively benign course of tracheobronchial tuberculosis and believes that cured patients who have learned good habits and the importance of hygiene are actually good insurance risks.

PROGNOSIS IN TUBERCULOSIS OF THE PLEURA

Since it is very doubtful whether tuberculosis of the pleura exists without a previous involvement of the lung, the prognosis always depends in part on the extent of the latter. A serous effusion usually will absorb in time, with a residuum of more or less adhesions. Occasionally a tuberculous empyema results, but in the absence of progressive lesions in the lung the actual prognosis of the pleurisy is relatively good.

Nobel [21] studied seventy-eight cases of tuberculous pleurisy. Of these, twenty-six were lost sight of; thirteen patients died and thirty-nine were observed for a period of from four months to nineteen years. Of the latter, 44 per cent recovered completely, 36 per cent showed only slight changes, and 10 per cent showed more or less severe changes, including pulmonary infiltration.

GENERAL PROGNOSIS

From the medical service at the Children's and University hospitals (pediatric department), we have studied the histories of 157 cases of tuberculosis of the lungs, pleura and tracheobronchial nodes. Only those patients who died in the hospital or who could be traced by the social service department are included. The diagnosis was established on the basis of (1) autopsy observations; (2) tubercle bacilli in the sputum; (3) typical roentgenologic and physical pulmonary signs in cases of tuberculous meningitis or tuberculous peritonitis (proved at operation), and (4) typical pulmonary lesions and clinical course in an infant under

17. Oldenburg, T.: Ugesk. f. Læger. **83**: 683 (May 26) 1921; cited in Am. J. Dis. Child. **27**: 417 (April) 1924.

18. MacGregor, A. R.: Edinburgh M. J. **32**: 45 (Feb.) 1925.
19. Watt, J. A.: Lancet **2**: 1327 (Dec. 27) 1924.
20. Chadwick, H. D.: Boston M. & S. J. **191**: 1069 (Dec. 4) 1924.
21. Nobel, E.: Wien. klin. Wchnschr. **34**: 423 (Sept. 1) 1921.

2 years with a positive tuberculin test. Very few of the patients who died lived longer than six months under observation, the majority dying within two or three months.

We also list children (table 4) with positive tuberculin tests who have been followed for a period of from nine months to fifteen years since discharge. That more cases were not available for study is due to the rigid restrictions placed on the interpretation of the histories.

TABLE 3.—*Observations in Children Followed Over a Period of Thirteen Years*

	Deaths					
	Age on Admission					
	1st Yr.	2d Yr.	3 to 5 Yrs.	6 to 10 Yrs.	11 to 13 Yrs.	Total
Pulmonary tuberculosis	20	20	9	3	1	53
Pulmonary tuberculosis with meningitis	14	18	17	2	0	51
Pulmonary and miliary or generalized tuberculosis	15	6	11	1	4	37
Hilum tuberculosis	1	0	1	1	0	3
Hilum tuberculosis and meningitis	0	0	0	4	0	4

Nine of the children with pulmonary tuberculosis under 7 years of age had tubercle bacilli in the sputum

Living—Pulmonary Cases

Girl, aged 5 years; seen 6 years later; disease apparently arrested
Girl, aged 7 years; seen 4 months later; not improving

Living—Hilum Cases

Boy, aged 16 months; seen 3½ years later; had gained 18 pounds but still showed dry râles at right hilum
Boy, aged 8 years; seen 5 months later, had gained 9 pounds and appeared well

Tuberculosis of the Pleura

Boy, aged 16 months; seen 2½ years later; seemed well but had gained only 3½ pounds
Boy, aged 9 years; seen 7 years later; seemed well; weighed 160 pounds
Boy, aged 11 years; seen 13 years later; seemed perfectly well
Boy, aged 13 years; seen 13 years later; seemed perfectly well
Girl, aged 13 years; seen 7 months later; improving (also had tuberculous peritonitis)

These figures illustrate plainly that: (1) tuberculosis usually is well advanced when patients are brought to our hospitals; (2) a large percentage of patients whose disease begins as a pulmonary involvement will develop a general disseminated tuberculosis with or without meningitis; (3) a general children's ward is not an ideal place for treatment, and (4) prognosis in well marked pulmonary tuberculosis in early life is extremely grave. The belief also is confirmed that the prognosis in tuberculosis of the pleura without obvious involvement of the lung is relatively favorable.

We cannot share the fear, expressed by some authors, that a tuberculous child will infect others in the ward. Were these patients ambulatory, there might be a chance for this; but as bed patients their potentiality for harm must be extremely limited if they are cared for with "infectious precautions," just as are the patients with typhoid or meningitis.

We also were able to follow tuberculin-positive patients who were not actively tuberculous, and our observations are summarized in table 4.

SUMMARY

Thirty-one tuberculin-positive patients suffering from a variety of acute and chronic diseases, fourteen of which involved the respiratory tract, were found to be well and, for the most part, in good nutritive condition at periods varying from nine months to fifteen years after their discharge from the hospital. These results do not prove anything, but they strengthen the belief that a positive tuberculin test need not necessarily be interpreted pessimistically even when it occurs in infants under 2 years of age.

An immense amount of follow-up work was done by the workers in the department for prevention of disease of the Children's Hospital and the social service department of the University Hospital. The figures given represent only a small percentage of the attempts made to trace patients.

PROPHYLAXIS

Prophylaxis may be considered from the standpoint of preventing (1) infection and (2) clinical disease.

Infection.—Since practically every adult city dweller has acquired tuberculous infection by the age of 30, immunity from infection seems to be almost unattainable. All evidence points to three important factors with regard to infection: (1) the size and virulence of the infecting dose of tubercle bacilli; (2) the frequency and prolongation of exposure to infection, and (3) the particular ease with which infection may be acquired before the second year of life.

The following dictum, therefore, should be clearly established: Children, and especially infants, should never be exposed to an open case of tuberculosis if there is any feasible way to prevent it.

In carrying this into effect, we must be prepared to recognize tuberculosis in the child's environment no matter how well it may be masked. Mother, father, caretaker, relatives or frequent visitors may be suspected. Even household pets, such as dogs and cats, have been incriminated. Any individual with a chronic cough, no matter how healthy he or she may appear, or with open cervical adenitis or ulcerative skin lesions, may be the distributing focus. In determining this, a diplomatic physician can usually avoid causing a serious family disturbance. If he finds himself balked, he should let the family take the responsibility for refusal to investigate. It is hard to implicate a devoted grandparent who suffers from "winter cough," but no considerations of sentiment should be allowed to interfere.

TABLE 4.—*Children Showing Positive Tuberculin Tests*

Age	Sex*	Weight on Discharge, Pounds	Diagnosis in Hospital	Result†	Gain in Weight, Pounds
5 mo.	♀	8	Acute cervical adenitis	15 yr.	....
9 mo.	♀	....	Pneumonia	15 mo. Wt. 30 lbs.	....
11 mo.	♂	10½	Intestinal indigestion	4 yr.	29½
17 mo.	♀	19¾	Phlyctenular conjunctivitis	3 yr.‡	11¼
17 mo.	♂	25	Croupous pneumonia	4 yr.	17
20 mo.	♀	17¾	Bronchopneumonia	15 mo.	17¼
2 yr.	♂	25½	Acute bronchitis	6 yr.	31¾
2 yr.	♀	22	Croupous pneumonia	9 mo.	7
2 yr.	♂	29	Pyelitis	3 yr.	13½
2 yr.	♀	24½	Pneumonia	3 yr.	13½
2 yr.	♀	16	Gastritis	10 yr.	....
3 yr.	♂	33	Pleuropneumonia	1 yr.	....
3 yr.	♀	35	Pneumonia	6 yr.	39
4 yr.	♀	32	Arthritis	10 yr.§	....
5 yr.	♂	32	Pneumonia	15 mo.	13
5½ yr.	♂	65½	Chorea	7 yr.	74½
6 yr.	♂	40	Pleuropneumonia	8 yr.	....
6 yr.	♂	32	Pleuropneumonia	5 yr.	39¾
6 yr.	♀	38	Influenza	7 yr.	52
7 yr.	♀	46	Nephritis	13 yr.	....
8 yr.	♀	44½	Acute cervical adenitis	10 yr.	....
8½ yr.	♂	....	Bronchopneumonia	2 yr.	....
8½ yr.	♂	50	Chorea	7 yr.	....
9 yr.	♀	....	Anemia	13 yr.¶	....
10 yr.	♂	....	Pancarditis	7 yr.	....
10½ yr.	♂	61½	Epilepsy (?)	18 mo.	....
11 yr.	..	....	Valvular heart disease	16 mo.#	....
12 yr.	♂	55	Nephritis	3 yr.	35
12½ yr.	♂	....	Typhoid	15 yr.	....
13 yr.	♂	....	Acute laryngitis	15 mo.	....
13 yr.	♀	55	Acute cervical adenitis	4 yr.	....

* In this column ♂ indicates male; ♀, female.
† The time indicates when the patient was seen. Except in the cases specially indicated, all seemed perfectly well.
‡ Trouble with the eyes.
§ Arthritis.
¶ Splenomegaly.
# Heart disease.

The sentiment should be shown for the baby's welfare. The difficulty is even greater in the case of the tuberculous mother with the new-born baby, and yet she is the greatest menace of all. Separation should be made, and even the plea of the necessity for breast feeding fails to be convincing today when healthy human milk can be bought and when artificial feeding can be practiced so successfully. Even a few days' exposure to an actively tuberculous mother may be fatal. Debré reports five deaths from tuberculosis in infants who had been with their mothers only from thirteen to forty-two days. On the other hand, evidence is accumulating that immediate removal and continued separation give the child as good a chance as though the mother had been healthy.

Owing to the difficulty often encountered in securing separation from tuberculosis in the home, many attempts have been made to increase the infant's resistance. These began with the use of tuberculin and have included many forms of vaccines, etc. Rosenberg [22] proposed to immunize infants through the milk of cows that had been inoculated with a vaccine prepared from killed human and bovine bacilli.

The most recent biologic method is that of Calmette [23] and his co-workers. They have developed a strain of tubercle bacillus by special cultural methods which apparently has lost permanently its tubercle-producing power and its virulence for domestic animals but retains its antigenic power. This they call the Bacillus Calmette Guérin (B C G).

By introducing this living organism into animals, it was found that they became resistant to tuberculous infection, without any bad results from the inoculation. The organisms, however, remain viable and on this fact is predicated the results. Such animals do not exhibit any constancy in their tuberculin reaction. Calmette found in the department of the Seine that 24 per cent of 1,364 infants of tuberculous parents died of tuberculosis before the age of 1 year, and that in Paris the percentage of deaths ran as high as 32.6. He therefore felt that he was justified in using B C G in infants born into tuberculous households.

Infants living in a grossly tuberculous milieu were first given the culture orally within the first week or ten days of life. From six to eighteen months later, in the same environment, practically all of them were alive and apparently well, less than 2 per cent having succumbed to tuberculosis. Protection apparently persists as long as the B C G remains viable in the body, and it is proposed to reinoculate the children at intervals, so as to carry them through the first three years of life.

Hygiene and Nutrition.—In spite of the enthusiasm of their originators, objection has been raised to all the biologic methods, either on the score of their futility or because of their actual or potential dangers. The greatest reliance has always been placed on increasing resistance by those procedures which are known to be curative; namely, rest, fresh air, sunlight and proper food.

The child with the positive tuberculin reaction but without sign of active disease is the one who will best respond to treatment, thereby, in many instances, avoiding clinical disease. For such children among the poor, Hess [24] advocated the preventorium—a sanatorium for the prevention of clinical tuberculosis. Added to the advantage to the child's nutrition and health which life in such an institution brings, there is the almost equally great advantage of removing him from the infectious focus in his home. In addition, the mother, relieved of his care, may be able to place herself under sanatorium treatment, thus often insuring her life for the child as he returns to his home. When preventoriums are not available, the tuberculin-positive child should be entered on the rolls of a nutrition clinic or on a private physician's list as a special liability.

The first desideratum is to secure for that child a gain in weight which will at least bring him to a normal weight for his height, regardless of age. The second is to improve his bodily vigor so that he is not fatigued by any ordinary exertion. A well nourished child who never tires has an excellent chance of keeping his infection quiescent. In this program, rest at first is the most important factor.

Definite arrangements should be made for examination, biweekly or monthly at first, and then at longer intervals depending on the progress. Each examination should include a general survey, with weighing and measurements, and a record of temperature and pulse. A roentgenogram of the chest should be taken, and repeated, as indications warrant, until all danger is past.

The child must be made to feel that for him health and nutrition transcend all other considerations in importance. Theoretically, this might involve the danger of making hypochondriacs of these children, and yet practically the danger is negligible. If the results are satisfactory, they will lose their fears all too quickly as they return to normal activities.

In teaching rules of health, more can be done in classes than by individual methods. In most cities, undernourished children are taught in special schools, usually with provision for unlimited fresh air and for rest periods with midmorning lunches. The remarkable gain in weight which many of these children show is clear proof of the value of the method. Krauss [25] makes a plea for better school inspection in order to limit the number of transmissible diseases acquired at school. These have much to do in stirring up tuberculous infections which otherwise might become quiescent.

TREATMENT OF ACTIVE TUBERCULOSIS OF CHEST

Treatment may be considered under the headings (1) general constitutional; (2) specific; (3) special, and (4) miscellaneous.

1. *General Constitutional Treatment.*—The keystone of constitutional treatment is rest, and the abutments are appropriate food and fresh air. These are generally admitted to be essential, no matter what other methods are adopted.

Rest should be as nearly absolute as possible during the febrile stage. While asthenia lasts, the child usually is willing to rest as effectively as does an adult. When improvement begins, the enforcement of complete rest is not only impossible but unwise. Various forms of quiet occupation, such as reading, games, knitting and basket-weaving, are really an essential part of the treatment. When the fever subsides, which may not be for many months, very carefully graduated exercise and rides are indicated, and later quiet games. Throughout the whole course the temperature, pulse, weight, bodily vigor, physical condition and roentgenograms are the guides to progress.

22. Rosenberg, J.: M. Rec. **88**: 917 (Nov. 27) 1915.
23. Calmette, A., and others: Ann. de l'Inst. Pasteur **60**: 89 (Feb.) 1926.
24. Hess, A. F.: The Neglect to Provide for the Infant in the Anti-tuberculosis Program, J. A. M. A. **63**: 2176 (Dec. 19) 1914.
25. Krauss, A. K.: Am. Rev. Tuberc. **5**: 994 (Feb.) 1922.

Unless the rectal temperature within six months can be limited to an evening rise not exceeding 99 to 99.2 F., the chances are that a complete arrest will not be obtained. The child may appear to be healthy but is in constant danger of a relapse.

Hyperalimentation used to be considered a basic factor in treatment and is still advocated by some pediatricians. The stuffing process, for a bed patient with a toxic temperature, is easy to overdo, particularly owing to the fact that some children cannot take even a quart of whole cow's milk a day without suffering from febrile gastro-intestinal upsets.

A varied balanced diet, containing green leafy vegetables and fruits, with milk up to but not exceeding 1 quart a day, is the desideratum. From 1 to 6 years the average daily requirements for a healthy active child may be estimated at: protein, from 4 to 2.5 Gm.; fat, from 4 to 3 Gm., and carbohydrate, from 12 to 10 Gm. per kilogram of body weight. A febrile bed patient may not be able to consume this allowance, but if the child is much below the normal weight for height, the allowance is not excessive. It may also be desirable to substitute 1 Gm. of protein and 0.5 Gm. of fat for 2 of the grams of carbohydrate. The allowance in health from 6 to 18 years averages: protein, from 2.5 to 2 Gm.; fat, 3 Gm., and carbohydrate, 10 Gm. This also may need some modification.

Constipation may exist even though there is a daily stool. The average bulk of the latter is the important factor. When this falls off, a laxative such as magnesia is indicated. A sudden anorexia with or without a coated tongue also indicates the need for a laxative and a six to ten hour fast. Castor oil should not be used, and even calomel is rarely needed.

No one to our knowledge has even objected to fresh air for patients with pulmonary tuberculosis. The more nearly continuous it can be, the better. In cold weather, the bodily temperature must be kept up by external heat in the early mornings if subnormal readings are obtained.

Heliotherapy by direct sunlight or by ultraviolet rays can be included under constitutional treatment. It has long been believed that direct sunlight may have an injurious effect on patients with active pulmonary involvement, but recent reports, notably that by Gerstenberger,[26] indicate that ultraviolet rays may be distinctly beneficial.

An experience at the Children's Hospital, illustrated by the following cases, suggests caution in the application of the rays:

CASE 1.—L. H., a colored girl, aged 4 months, was treated in the outpatient clinic from March 16 to April 14, 1925, for malnutrition and spasmophilia. During this time, she was given ultraviolet radiations twice a week, 220 volts at 24 inches beginning at two minutes front and back. April 14, she was admitted to the wards and died, April 27. Autopsy showed caseous bronchial nodes, generalized miliary tuberculosis and tuberculous meningitis.

CASE 2.—M. A., a colored girl, aged 6 months, was treated in the outpatient clinic for rickets from Feb. 18 to April 22, 1925. During this time she received similar light treatments. April 22, she was sent to the wards because of bronchopneumonia, and died, April 29. Autopsy showed caseous nodes and caseous pneumonia.

CASE 3.—L. P., a colored girl, aged 14½ months, was admitted to the hospital, Jan. 22, 1925, for rickets and malnutrition. During February she also received light treatment, but a diagnosis of hilum tuberculosis was made. March 1, she developed signs of meningitis and died, March 9. Autopsy showed caseous bronchial nodes, miliary tuberculosis and tuberculous meningitis.

In case 2, the pulmonary lesions may have begun before the light treatments were given, but in cases 1 and 3 dissemination from the nodes probably began during or after the treatments. It is possible that the exposures were too severe at first.

2. *Specific Treatment.*—An immense amount of work has been done in the attempt to destroy, or to limit the spread of, tubercle bacilli in the body by the use of tuberculin [27] or by vaccines or extracts [28] prepared from dead or living tubercle bacilli. The value of these methods also has been vigorously championed and as vigorously denied. The fact that their advocates obtain their best results in types of tuberculosis which do reasonably well under general constitutional treatment, and also the fact that the latter is never neglected, arouse the suspicion that the specific factors are of secondary importance.

The use of foreign protein [29] in the form of horse serum has a few advocates. Obviously, in the case of a patient who is steadily growing worse, the temptation is strong to "do something." Among many clinicians the belief is prevalent, however, that the patient who cannot be made to improve in fresh air, at rest, is not likely to be benefited by any form of biologic therapy.

3. *Special Treatment.*—Many authorities consider pneumothorax as applicable to selected cases of pulmonary tuberculosis in childhood as it is to adults. The object is to put the lung at rest. The pleural cavity must be free from old adhesions; the pulmonary lesion must be strictly unilateral, and there should have been evidence of progression of the disease under general treatment. The last condition often is fulfilled; the others are more rare, especially the second.

In place of pneumothorax, Golden [30] advocates thoracic restriction by external pressure, either with adhesive plaster or by special apparatus.

Theoretically, restriction of pulmonary excursions seems as rational as does splinting of a tuberculous spine. The objection to its use would seem to arise from the impossibility of restricting only that portion of the lung which is affected, and the undesirability of limiting normal aeration and function in the unaffected portions of the lung. When an entire lung is more or less involved, we have ideal conditions for pneumothorax, but in that case very rarely in childhood will the other lung be found free of all disease.

Immediate tracheotomy for the prevention of suffocation after the rupture of an abscess of the tracheobronchial nodes has been practiced successfully by Pesch,[31] while d'Oelsnitz and Carcopino [32] obtained immediate relief from impending suffocation by the use of roentgen rays in two patients suffering from tracheobronchial adenopathy. In spite of the undoubted symptomatic relief, no change was demonstrable in the roentgenograms of the nodes, before and after treatment. The authors advocate the use of roentgen rays only in patients with severe acute dyspnea due to enlarged nodes.

26. Gerstenberger, H. J.: Treatment of Extensive Pulmonary Tuberculosis in Infants by Ultraviolet Rays, Am. J. Dis. Child. **33**: 54 (Jan.) 1927.

27. Jeanneret, L.: Arch. de méd. d. enf. **19**: 414 (Aug.) 1916.
28. Van Ruck, Karl; and Flack, R. E.: M. Rec. **99**: 1048 (June 18) 1921.
29. Czerny, A., and Eliasberg, H.: Jahrb. f. Kinderh. **102**: 321 (March) 1923.
30. Golden, S.: Am. Rev. Tuberc. **8**: 170 (Oct.) 1923.
31. Pesch, A.: Med. Klin. **10**: 1696 (Nov.) 1914.
32. D'Oelsnitz, M., and Carcopino, M.: Bull. et. mém. Soc. méd. d. hôp. de Paris **45**: 297 (March 4) 1921.

4. *Miscellaneous Treatment.*—Under this heading, there might be a long list of remedies. Of these, calcium, perhaps, deserves mention. Woersen [33] reported that, after the administration of calcium salts for two months in supposed hilum tuberculosis, eight out of twenty patients showed definite evidence of calcification of nodes, whereas in only one of twenty controls was calcification noted after seven months. Woersen's theory is that children with tuberculosis often show a negative calcium balance, and that the caseous tissue of tuberculous deposits shows an affinity for calcium.

Of "Sanocrysin," the sodium-auric thiosulphate salt which is alleged to inhibit the growth and finally to cause fragmentation of the tubercle bacillus, perhaps the less said at this time the better. Its use is followed at times by marked reactions and is therefore not without danger.

During the febrile period, if cough is troublesome, some sedative such as codeine or a combination of codeine with barbital or with phenobarbital may be needed at night if the cough interferes seriously with sleep. Fresh air, however, is the best sedative. Dilute hydrochloric acid may be useful in anorexia, and cod liver oil in small doses may be used as an accessory food if appetite is good. Apart from laxatives, there will rarely be need for other medication.

CONCLUSIONS

1. The prognosis in active pulmonary tuberculosis in childhood is bad in inverse proportion to the increasing age of the patient.

2. Involvement of bronchial nodes with only a few small discrete pulmonary foci—the primary lesions—gives a relatively favorable prognosis under proper conditions.

3. Involvement of the pleura without recognizable involvement of the lung gives an expectancy for cure which also is relatively good.

4. Children over 3 years of age who are tuberculin-positive without any clinical evidence of tuberculous disease should show a large percentage of arrests, if they can be protected against reinfection and be properly supervised. Even tuberculin positive infants have a reasonably fair chance of escape under like conditions.

5. To prevent massive or repeated infection, the child and especially the infant must be separated from any active focus in the home.

6. To prevent infection from becoming clinical disease, the principles involved in nonspecific constitutional treatment are still of basic importance. It is possible that benefit from specific biologic factors which increase resistance may be in the process of fulfilment.

7. In the treatment of active tuberculous disease of the lungs, nodes and pleura, rest, fresh air, appropriate food and occasional laxatives comprise the chief factors. Ultraviolet radiations and exposure to direct sunlight are useful adjuncts but cannot be applied indiscriminately.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. OPIE, HEMPELMANN, BURHANS, DUNHAM, AND GITTINGS, LATHROP AND ANDERSON

DR. CHARLES HENDEE SMITH, New York: Tuberculosis in infants is usually generalized and progressive. It may be retrogressive and go on to a cure, even when it is acquired in the first year. Unfortunately, it too often terminates in fatal meningitis. In children, pulmonary disease occurs rarely; bone, joint, peritoneal and cervical lymph node involvement more often. But the great mass of children who have been infected with the tubercle bacillus do not show any apparent disease. We know that most of those with obscure infections have bronchial lymph node tuberculosis. Dr. Opie says that the diagnosis is determined by the roentgen ray and the activity by the reaction. I believe that this is putting the cart before the horse. The tuberculin reaction tells us only whether the child has been infected or not. Dr. Burhans said that the Pirquet test is less sensitive than the Mantoux test. I believe that it is merely less accurate, a hit-or-miss test. The intracutaneous test is more accurate because it puts the tuberculin into the deeper, sensitive layer of the skin. Not all children are infected. In the Bellevue Hospital series we find not more than 40 per cent at puberty, and all recent accurate statistics agree with us. Is the disease active and progressive, or is it latent, dormant, quiescent, sleeping or cured? We answer this question according to the general symptoms—presented by active disease from any cause—of fever, failure to gain, languor, droopiness and general aspect. Where is the disease? In an infected child, if the disease is not evident, it is probably tracheobronchial. The signs of tuberculosis in these nodes are obscure and difficult. Percussion is rarely useful. In the absence of other discoverable cause of mediastinal disease, and with a positive tuberculin reaction, a tracheal whisper below the fourth dorsal spine is the best physical sign available indicating lymph node involvement.

DR. JOHN A. FOOTE, Washington, D. C.: I was interested in Dr. Hempelmann's paper because of the problems that we all meet in diagnosis of enlargement of the tracheobronchial glands. This is particularly true in the winter months when we have so many double infections. It is difficult to determine whether we are dealing with the end-result of acute infection, or with chronic infection, or whether we are dealing with both. Again we have difficulty in the diagnosis of pertussis. As Dr. Hempelmann remarked, symptoms of an acute infection superimposed on a chronic bronchial gland inflammation may give rise to cough, vomiting and other symptoms, perhaps a low-grade fever, which is exactly like the syndrome we meet in pertussis. I was very glad to hear Dr. Dunham say that it was sometimes impossible to diagnose the specific nature of these enlargements of the cervical lymph nodes through the use of the roentgenogram. In the whooping-cough complication, it is rather interesting that the usual methods of diagnosis sometimes are not available. Many of us like to make a differential blood count with the expectation of finding in the early stage of exacerbation of the cough a much increased lymphocytosis. In cases in which previously there was an enlargement of the lymph nodes, we sometimes do not get this increased lymphocytosis, as if some mechanism in the original infection tended to keep down the increase of lymphocytosis at first. Eventually we obtained the increased number of lymphocytes, but not to the usual degree. That shows how dangerous it is to say positively that an infection is not pertussis because of the absence of mononuclear lymphocytosis in patients who previously had a chronic infection in the tracheobronchial glands. We are prone to talk of thymic enlargement as a pathologic condition. In many of the pictures we have taken at the Children's Hospital, we seem to see increase in the size of the thymus. This is probably due to hypostasis by pressure of enlarged glands, and perhaps to the increased shadow produced by such glands. We have all probably noticed an enlarged thymus in many cases of pneumonia. We have seen a large thymus in the roentgenogram, and at autopsy the thymus was perfectly normal. As the thymus is a vascular organ, there is no question that it is affected by all the conditions which affect the venous circulation in the region of the hilum. Dr. Gittings spoke of the possible bad influence of heliotherapy in acute pulmonary tuberculosis. While there is, perhaps, evidence to the contrary, our statistics show a considerable increase in miliary tuberculosis among negro children in the hot weather, at a time when these children are exposed to the sun's rays to a greater degree than at other times of the year. Most of our cases of miliary tuberculosis occur during the hot weeks of the year. We do not

33. Woersen, A.: Beitr. z. Klin. d. Tuberk. **33**: 193 (March) 1915.

know as much about this condition as we would like to. About a hundred years ago Laënnec gave us as good a classification of the morbid anatomy of the disease as we could have. Because he was a genius, we have learned little more in a century than he did in a brief lifetime.

DR. H. M. GREENWALD, New York: Epituberculosis infiltration was first described by Eliasberg and Neuland in 1919 or 1920. Since then, other observers in Germany and France have reported similar clinical cases. Gerstenberger and Burhans reported a series of cases in children with extensive pulmonary tuberculous lesions. Several in their group unquestionably belong to the class termed epituberculous infiltration. It is a fairly well recognized clinical condition. The nature of the process, that is, the character of the infiltration and the pathogenesis, however, are still a moot question. Pathologic studies have not been made because the condition is very mild, and children rarely died from the disease in this stage. In 1924, Eliasberg and I attempted to produce experimentally epituberculous infiltration in guinea-pigs. We inoculated guinea-pigs with a mildly virulent strain of human tubercle bacilli. The inoculation was made into the inguinal glands, which had previously been traumatized. The guinea-pigs were observed for two months for evidences of tuberculosis. They were roentgenographed twice a week; weight and temperature measurements were taken daily. After two months, an artificial pneumothorax was produced in each guinea-pig, and 1 cc. of a 1:50,000 solution of old tuberculin was injected intrapleurally. This was done to bring the tuberculin into direct contact with the lung of an allergic animal. After a few days, as a rule, the air was absorbed from the pleural cavity and the guinea-pigs apparently did not show any ill effect from the procedure. In two guinea-pigs, we were successful in producing an infiltration which did not show tubercle formation, caseation or cavitation. Microscopically, the right lung showed the endothelial lining well preserved. The alveoli were filled with a homogeneous substance which stained pink with hemotoxylin. Within this mass there were large polygonal cells with pale nuclei and abundant cytoplasm. The cells frequently showed vacuolization and black pigment granules.

DR. JULIUS H. HESS, Chicago: In 1910, while traveling in Europe, one of my daughters became ill. She had a low-grade temperature over a period of many weeks, lost weight, became anemic and developed tachycardia. She was kept in bed for three weeks, and on her return home she was again placed at rest. Because of more or less remote joint and muscle pains, anemia and tachycardia, her illness was diagnosed as a rheumatism with cardiac involvement. As all her symptoms improved, except the temperature, a Pirquet test was made. She developed a vesiculated lesion at the site of scarification which later became necrotic, healed slowly and left a deep scar. Roentgenograms taken at this time showed some increased hilum shadows, but were otherwise negative. Physical examination was negative. Active tuberculosis was suspected, but the seat of the lesion was not localized. A few months later she developed a phlyctenular keratitis. By 1911 she had made a complete recovery, and she has been in excellent health since. In 1922, when I made a periodic health examination of my family, the chest plate of this child included the cervical region. A large, calcified gland was in evidence above the clavicle. This was and is the only lesion that we have been able to localize. I have recited this experience of seventeen years ago because of the anxious months experienced following the diagnosis of an active, and what was suspected as being a generalized, tuberculosis, based to a large degree on the erroneous interpretation of the active tuberculin test. I believe that there is a close relationship between tuberculosis and phlyctenular keratitis, and that the latter may be interpreted as evidence of considerable immunity. It has been my belief that this single gland was the major lesion in the prolonged illness, and was the most important factor in the establishment of a high grade of immunity. I should like to ask Dr. Burhans whether he has found a great variation in the various tuberculins he has used in his general work. We find that they vary materially. I should like to ask Dr. Durham what he meant by the correction of deformity during the course of treatment.

DR. E. L. OPIE, Philadelphia: I agree with Dr. Dunham that treatment of all children with a tuberculin reaction or with evident roentgen-ray lesions would be unnecessary and undesirable. There is a group of children, in great part in contact with open tuberculosis, who have latent tuberculous lesions that require constant prophylactic care. These are children with tuberculosis of tracheobronchial lymph nodes and diffuse infiltration of the lungs, evident in roentgenograms and latent apical lesions. A conspicuous calcified lesion may represent the less serious phase of a disease which elsewhere is progressive. Extensive lesions of the tracheobronchial lymph nodes indicate that there has been or is advanced tuberculous infection. After latent tuberculosis of tracheobronchial lymph nodes has been recognized by roentgenologic examination, manifest disease has repeatedly made its appearance. Of even greater importance are the soft apical lesions which have not yet exhibited symptoms. We have repeatedly found this lesion in children who later developed clinically recognizable tuberculosis. Dr. Dunham advocates the care of children with potential tuberculosis. Selection of these children is still difficult, and by the plan I have proposed we do not select all the children who will develop tuberculosis, but progress has been made in this direction. In regard to the question of nomenclature, I agree with Dr. Smith that we are much more interested in observable changes than in names. It does not make much difference what we call these lesions, provided we define our terms. The word "latent" applied to tuberculosis has the sanction of long usage (of Laënnec and of Louis), and does not imply dormant or arrested.

DR. T. C. HEMPELMANN, St. Louis: I am very glad to hear Dr. Smith say that in New York third year medical students easily recognize d'Espine's sign. It again shows the superiority of the East over the West, particularly the Middle West. In St. Louis we have trouble teaching fourth year students how to recognize tubular breathing. Dr. Dunham says that the diagnosis of tuberculosis is easy, and it certainly is—when one finds tubercle bacilli in the sputum. I think this symposium shows that we are all agreed that when a child is suspected of having tuberculosis, the thing to do is to give it the benefit of the doubt, try to protect it from other infections which might lower resistance to the tubercle bacillus, such as measles and other respiratory infections, and then leisurely make up our minds whether this is a case that deserves bed rest and more intensive study. In other words, err on the side of safety, and regard each case as potentially active until proved inactive or healed.

DR. C. W. BURHANS, Cleveland: I have to agree with Dr. Smith in his comments on the variations in the Pirquet test. We have not used it for so long that I had forgotten that those things occur. In answer to Dr. Hess, we have not observed much variation in the different kinds of tuberculin. When we do not get a positive reaction and think that we ought to, we throw the solution out. For such failures we have blamed the age rather than the particular lot of tuberculin.

DR. H. K. DUNHAM, Cincinnati: In answer to the question of subjecting these patients to operation, certainly one would not wish to operate if the patient is suffering from active tuberculosis. But even in such cases, operative intervention is sometimes necessary. What I have tried to say is that many of the children whom we believe to be suffering from active tuberculosis promptly recover from the fever and other symptoms when the focus of infection has been removed surgically. Each of us has approached this subject from different angles, but I am sure that there would be very little difference in the way any one of us would handle a given case. I appreciate the effort to find a better and more definite diagnostic method by which we can detect tuberculosis in a child. I resent the taking of the results of any one of two of these diagnostic methods as final, and fooling ourselves into the belief that we have presented proof of tuberculosis in a form which requires treatment. I do not recommend that we should speak of a "potentially tuberculous lesion." That would be like speaking of a pretuberculous lesion. My contribution is a plea for a statement of the child's condition rather than a diagnosis of a specific lesion. I have called

a child "potentially tuberculous" because he requires the same treatment as a child suffering from tuberculosis. If physicians who take care of children will recognize and acknowledge the difficulty of diagnosing tuberculosis in a child, and will classify run-down children as "potentially tuberculous," the treatment will be indicated by the name alone, and our profession will save many children and help to reduce the death rate.

DR. J. C. GITTINGS, Philadelphia: I have seen so many malnourished children with a positive d'Espine sign but with negative roentgenograms and negative tuberculin tests that I fail to attach very much importance to it. Of late years, I have been examining cases of Hodgkin's disease for the d'Espine sign, and they all show it. This has not been an extensive observation, but it is the only thing that makes me cling to the hope that some day I may be able to get help from it. Some years ago, Dr. Fetterolf and I did a great deal of work on frozen bodies. The interscapular area in some children is almost completely filled with lung. In other children, there is a separation between the lungs of from 2 to 3 cm., depending on the size and development of the pulmonary lobes. In the latter cases, one would get by percussion simply the dulness of the solid structures of the mediastinal space. I think that interscapular dulness per se has to be interpreted very carefully.

GELATIN ADDED TO DIETS OF ARTIFICIALLY FED INFANTS*

JULIUS H. HESS, M.D.
AND
I. McKY CHAMBERLAIN, M.D.
CHICAGO

These feeding studies were carried out on a group of thirty-four average, normal, artificially fed infants at the University of Illinois Educational and Research Hospital Dispensary, and at three city infant welfare stations, conducted by the health department of Chicago.

There were about thirteen hundred breast and bottle fed infants in attendance at the three welfare stations and the university dispensary from which we selected the individual cases for our feeding studies. Breast feeding, in whole or in part, is the slogan of the welfare stations. As our work required artificially fed infants whose mothers would promise to cooperate with us in every detail, we thought ourselves fortunate in finding seventy-four infants who we believed would answer our requirements. As we expected to conduct the experimental study over a period of at least four months, only young infants could be used. Seventy-five per cent of our infants were under 3 months of age when observation was started. Thirty-four were carried through a minimum of eleven weeks of experimental feeding, with an average of fifteen weeks.

Forty of the seventy-four were discarded for one of the following reasons: Failure to attend the weekly conferences was in most instances considered sufficient cause to drop a case.[1] Several mothers who had other young children did not have sufficient time to cooperate with us and were dropped. In every case in which a conscientious attempt to follow instructions was not made, we excluded the mother. Illness of any severity prevented further study. In several instances the infant had been under observation so short a time that the data were not of comparative value.

The work was carried out under the direction of three physicians, Alfred S. Traisman, Charles K. Stulik and I. McKy Chamberlain, all working independently but feeding to a uniform scale. The infants were brought each week for examination and feeding regulation. At the first visit, after a thorough physical examination which included hemoglobin, weight and measurements, the infants were placed on a uniform feeding, figured per pound, infant body weight. The hemoglobin readings were all made with a Dare instrument. The same person made all of the blood examinations; a second reading made at the end of the study was made by the same technician without recourse to the first report. To complete our records, a photograph of each

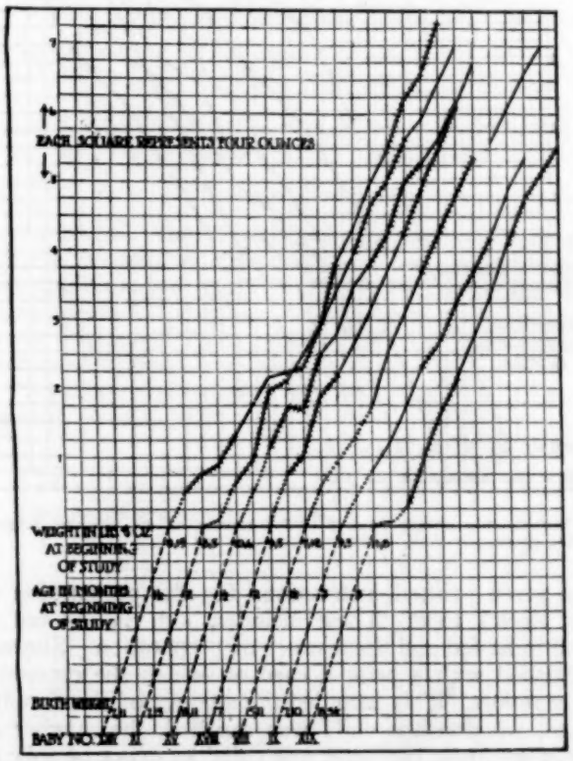
EACH SQUARE REPRESENTS FOUR OUNCES
WEIGHT IN LBS & OZ. AT BEGINNING OF STUDY
AGE IN MONTHS AT BEGINNING OF STUDY
BIRTH WEIGHT
BABY NO.

Chart 1.—Seven infants from 1½ to 3 months of age, showing progress during preexperimental, control, gelatin and egg yolk periods. In the charts the dotted line indicates control periods; crossed line, gelatin periods; solid line, egg yolk-orange juice periods. Each square represents one week.

infant was taken at the beginning and end of our study. At each visit, weight and temperature were taken and a careful investigation was made of the infant's progress during the week. Any unusual symptoms were carefully inquired into and recorded. A physical examination was made as often as indicated. The formula was increased so as to conform as nearly as the individual case warranted with our accepted standard feeding. This was based on the infant's weight.

A full-time graduate nurse, in addition to having conferences with the mothers when they reported weekly, went into the homes as often as indicated. Very large gains, arousing suspicion of extra feeding, failure to gain, refusal of feedings and failure to report, were the main impetus for these visits. By so doing, we were often able to determine whether or not the mother was actually following instructions, properly preparing the food and giving the infant conscientious care. The

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* From the Department of Pediatrics, University of Illinois College of Medicine, and the Department of Health, City of Chicago.

* The Mellon Institute of Industrial Research of the University of Pittsburgh and the Edible Gelatin Manufacturers' Research Society of America are to receive credit for the initiation of this study and the furnishing of funds necessary to its completion.

1. When a mother failed to return for one or more weeks and continued on the same formula, this is indicated by bracketing and noting the total gain in weight for the period.

nurse also held telephone conversations with the mothers and mailed special notices, in an effort to keep them reporting regularly each week.

In order to secure accuracy and uniformity, one-ounce measuring glasses and standard measuring spoons were given to each mother. Each week the mother

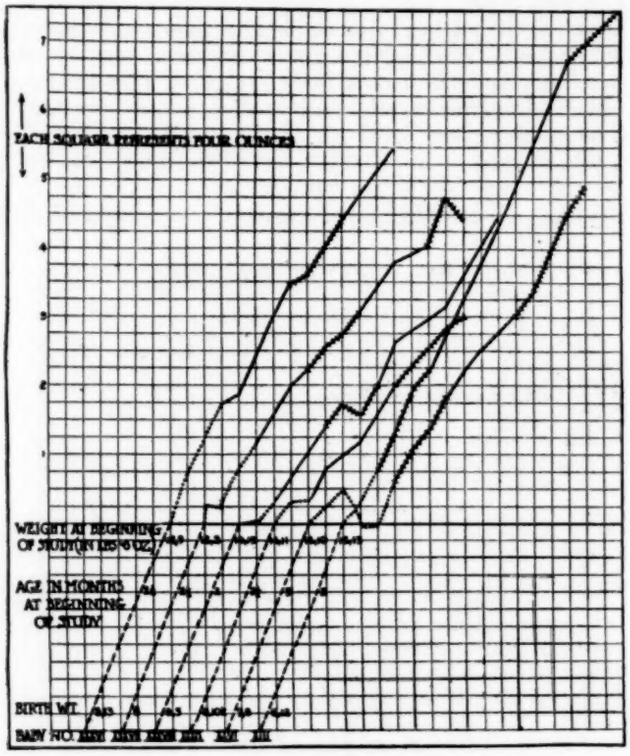

EACH SQUARE REPRESENTS FOUR OUNCES
WEIGHT AT BEGINNING OF STUDY IN LBS & OZ.
AGE IN MONTHS AT BEGINNING OF STUDY
BIRTH WT.
BABY NO.

Chart 2.—Six infants from 2 to 3½ months of age, showing progress during preexperimental, control, gelatin and egg yolk periods.

was given printed instructions for the preparation of that week's food. These included both the amount of food to be fed and the manner of preparation. She was furnished with a printed card on which she entered a daily report. This included the amount of the formula taken, whether the child was satisfied, the number of stools and their character and color, evidence of colic or gas, vomiting, disposition of the infant, and temperature. Along with her report, the mother brought a fresh specimen of stool to the conference each week.

The general plan of the work was as follows: All feedings were made with fresh cow's milk, boiled water and granulated sugar. Cow's milk to approximate 2 ounces per pound of infant body weight was fed daily. Water was added to make the total daily fluid approximate from 2½ to 3 ounces for each pound of body weight. Sugar was added to this in amounts approximating one-tenth ounce per pound of body weight. This mixture was boiled for three minutes. All infants were fed every four hours, receiving five or six feedings in twenty-four hours.

Throughout the study cod liver oil was given, 1 teaspoonful daily to babies from 1 to 3 months of age, and 2 teaspoonfuls daily after the third month. Orange juice was also given throughout the study, 1 ounce being given daily for each 16 ounces of milk used in preparing the formula. During the first one or more weeks, which we shall refer to as the control period, the infant was placed on a formula determined by the aforementioned standards. During this period the infant was carefully checked until we were sure that it might be passed as an average, normal, artificially fed infant. The mother was interviewed and carefully instructed, after which, if she failed to cooperate, her infant was dropped from this special study group.

As soon as the infant was taking the full formula and making satisfactory progress, one of two additions was made: either (1) 1 per cent of gelatin measured against the milk in the mixture, or (2) raw egg yolk.

1. The gelatin was dispensed to the mothers in envelops, each envelop containing sufficient gelatin for one day's feeding, as represented by 1 per cent by weight of the amount of milk in the formula. Seven envelops were given the mother at each time, enough to last for one week, at which time she again reported. When the mother failed to return at the end of the week, our nurse delivered it in person and reported on the mother's cooperation and the infant's condition. The gelatin was added to the feedings in the following manner: The gelatin contained in one envelop was soaked for ten minutes in one-half cup of cold milk taken from the day's feeding. This was then heated in boiling water and stirred until the gelatin was fully dissolved. It was then added to the remainder of the day's formula. When feeding the larger infants who received more gelatin because of the large amounts of milk in the formula, it was necessary to warm the individual feeding for a considerable time in order to reliquefy it sufficiently to pass through the nipple.

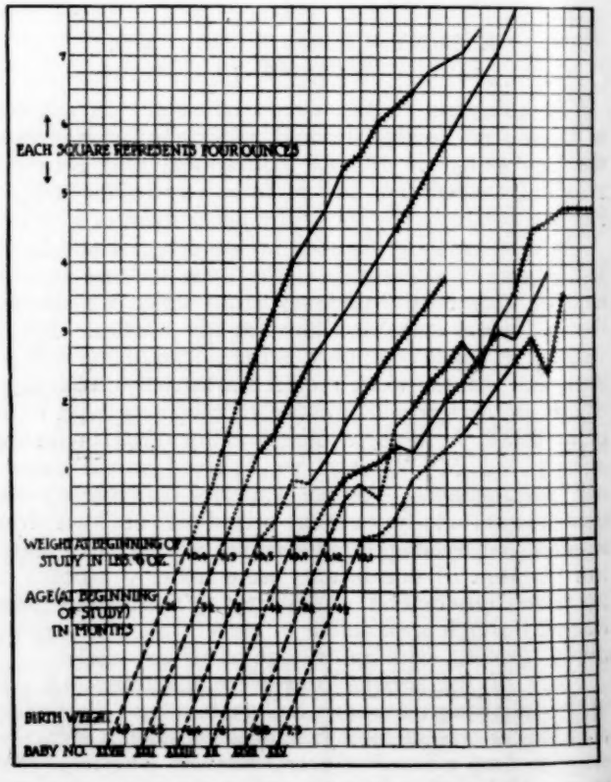

EACH SQUARE REPRESENTS FOUR OUNCES
WEIGHT AT BEGINNING OF STUDY IN LBS & OZ.
AGE (AT BEGINNING OF STUDY) IN MONTHS
BIRTH WEIGHT
BABY NO.

Chart 3.—Six infants from 2½ to 4½ months of age, showing progress during preexperimental, control, gelatin and egg yolk periods.

2. Raw egg yolk was added in amounts having approximately the same caloric value as the gelatin. We calculated the value of one average raw egg yolk as 68 calories and considered this to equal 20 Gm. of gelatin in food value.[2] The amount of orange juice given in

2. Locke: Food Values. Pope: Dietary Computer.

all periods was a constant throughout our study, 1 ounce being given for each pint of milk used in the day's formula.

In the control and gelatin feeding periods, it was given between feedings. During the time when egg yolk was added to the formula, the orange juice was added to the mixture. In the latter, both the orange juice and the egg yolk were added to the milk mixture after it had been boiled and cooled.

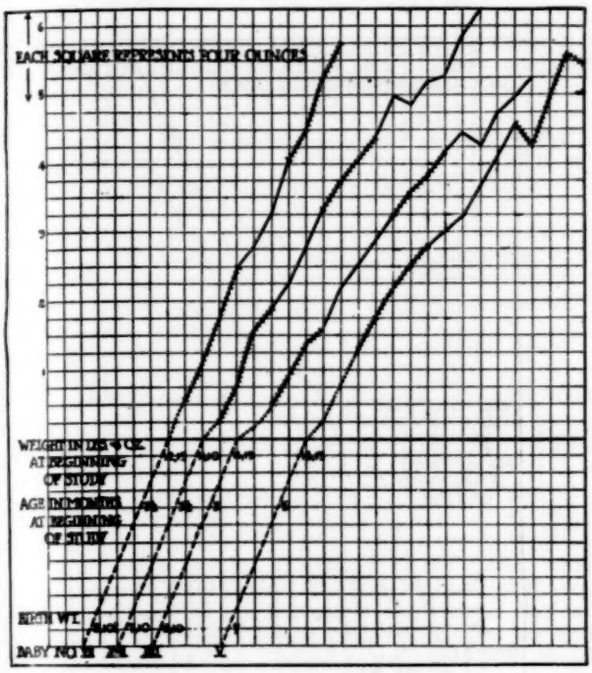

EACH SQUARE REPRESENTS FOUR OUNCES
WEIGHT IN LBS. & OZ. AT BEGINNING OF STUDY
AGE IN MONTHS AT BEGINNING OF STUDY
BIRTH WT.
BABY NO.

Chart 4.—Four infants from 3 to 5 months of age, showing progress during preexperimental, control, gelatin and egg yolk periods.

TABLE 1.—*Hemoglobin Readings at Beginning and End of Study*

Group 1. Twenty-six infants fed alternate period of gelatin or egg yolk-orange juice milk mixtures. Feeding experiments covered periods of from eleven to sixteen weeks.

Infant	First Reading	Second Reading	Gain	Loss
24	83%	81%	....	2%
11	70%	82%	12%	
15	75%	85%	10%	
18	73%	75%	2%	
8	80%	87%	7%	
9	75%	80%	5%	
19	70%	76%	6%	
36	60%	80%	20%	
37	60%	78%	18%	
38	68%	84%	16%	
39	70%	82%	12%	
26	84%	83%	....	1%
13	82%	92%	10%	
28	85%	84%	....	1%
31	78%	83%	5%	
33	75%	75%		
12	75%	80%	5%	
27	60%	73%	13%	
25	82%	86%	4%	
7	80%	88%	8%	
17	80%	87%	7%	
21	65%	82%	17%	
5	70%	75%	5%	
40	75%	75%		
1	78%	77%	....	1%
22	68%	76%	8%	

Group 2. Three infants fed gelatin milk mixture throughout.

Infant	First Reading	Second Reading	Gain	Loss
16	85%	81%	....	4%
32	83%	75%	....	8%
35	88%	75%	....	13%

Group 3. Three infants fed egg yolk-orange juice milk mixture throughout.

Infant	First Reading	Second Reading	Gain	Loss
41	64%	81%	17%	
42	75%	82%	7%	
20	80%	80%		

The only iron received by group 2 was that contained in the cow's milk, orange juice and cod liver oil, while group 3 received in addition that contained in the egg yolk.

TABLE 2.—*Summary*

Twenty-eight infants fed alternate periods of gelatin and egg yolk-orange juice milk mixtures:
- CONTROL WEEKS, a total of 69 weeks.
  Milk, 1.76 oz.; sugar, 1/11.21 oz.; calories, per lb., 45.90; weekly gain, 5.78 oz.
- GELATIN MILK MIXTURE WEEKS, a total of 154 weeks.
  Milk, 1.906 oz.; sugar, 1/11.89 oz.; calories, per lb., 48.21; weekly gain, 6.44 oz.
- EGG YOLK-ORANGE JUICE MILK MIXTURE WEEKS, a total of 151 weeks.
  Milk, 1.888 oz.; sugar, 1/12.49 oz.; calories per lb., 47.36; weekly gain, 6.46 oz.

Three infants fed gelatin milk mixture only:
- CONTROL WEEKS, a total of 7 weeks.
  Milk, 1.75 oz.; sugar, 1/12.42 oz.; calories, per lb., 44.67; weekly gain, 6.85 oz.
- GELATIN MILK MIXTURE WEEKS, a total of 40 weeks.
  Milk, 1.89 oz.; sugar, 1/12.10 oz.; calories, per lb., 47.71; weekly gain, 5.82 oz.

Three infants fed egg yolk-orange juice milk mixture only:
- CONTROL WEEKS, a total of 7 weeks.
  Milk, 1.62 oz.; sugar, 1/14.5 oz.; calories, per lb., 40.67; weekly gain, 6.42 oz.
- EGG YOLK-ORANGE JUICE MILK MIXTURE WEEKS, a total of 27 weeks.
  Milk, 1.85 oz.; sugar, 1/14.70 oz.; calories, per lb., 45.16; weekly gain, 6.75 oz.

Gelatin or orange juice and raw egg yolk were added to the formula in most instances for alternate periods of approximately three or four weeks. Cooked cereal was added to the infant's diet as late as the individual case warranted. The cereal, when fed, was reported in terms of carbohydrate added.

Feeding studies were started, Sept. 15, 1926, and ended, Feb. 1, 1927.

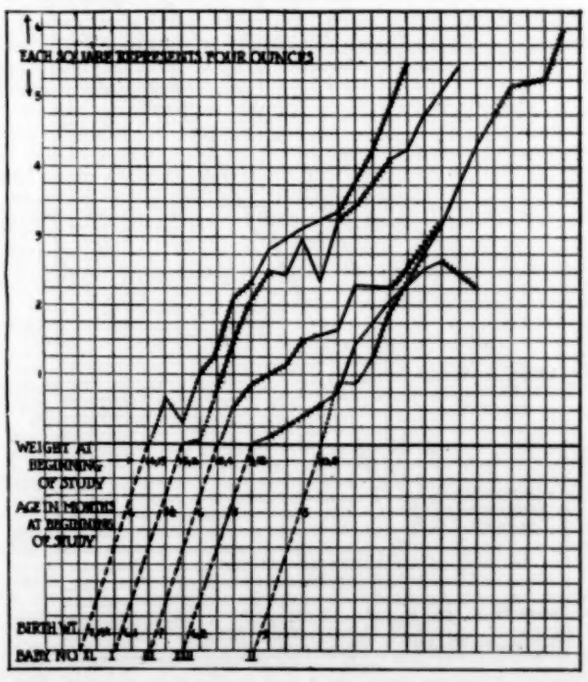


Chart 5.—Five infants from 5 to 6 months of age, showing progress during preexperimental, control, gelatin and egg yolk periods.

The following abbreviations are used: Gel., gelatin; Or. J., orange juice; E. Y., raw egg yolk; C. L. O., cod liver oil. In the charts control periods are represented by dotted lines; gelatin periods by crossed lines, and egg yolk periods by solid lines.

In our tabulations of the individual cases and in the charts, we have excluded those periods, using the week

as the unit, during which we did not believe the mother followed instructions or when the child showed evidence of an acute infection or had a diarrhea without temperature, which was of sufficient severity to warrant dropping it out.

When an infant became ill or sick on a given feeding after a sufficient period of convalescence, the infant was continued on the diet to which it was accustomed, until we believed it was wise to substitute a new feeding.

In the tabulations the milk and sugar represent the average ounces fed per pound of infant body weight for the period of weeks indicated. The weekly gains given are average weekly gains for the period of weeks indicated.

Twenty-eight infants were fed alternate periods of the gelatin or egg yolk-orange juice milk mixtures. On the gelatin-milk mixture there was a total of 154 weeks of feedings with an average gain of 6.44 ounces a week. On the egg yolk-orange juice milk mixture there was a total of 151 weeks with an average gain of 6.46 ounces a week. It is difficult to evaluate the advantage or disadvantage of one type of feeding over the other on this basis alone. It is to be noted that there was only a fractional difference in the average end-result of ounces gained weekly on the two mixtures. During the period that gelatin was fed, however, the infants received slightly larger average amounts of milk and sugar: milk 1.906 as against 1.88 ounces, and sugar 1/11.89 as against 1/12.49 ounces.

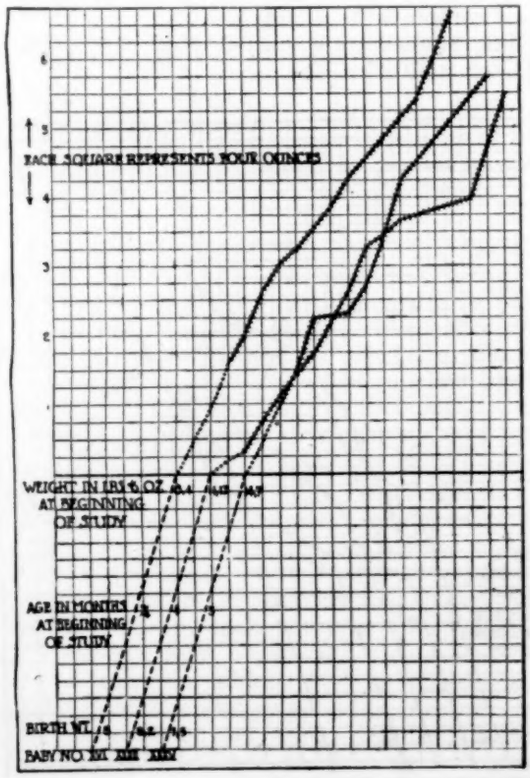

EACH SQUARE REPRESENTS FOUR OUNCES
WEIGHT IN LBS. & OZ. AT BEGINNING OF STUDY
AGE IN MONTHS AT BEGINNING OF STUDY
BIRTH WT.
BABY NO.

Chart 6.—Three infants from 3 weeks to 4 months of age, gelatin control cases.

In our final figures both the gelatin milk mixture and egg yolk-orange juice milk mixture periods show greater average weekly gains, 6.44 and 6.46 ounces, respectively, as compared with the average gain of 5.78 ounces weekly during the initial control period. We believe that some of this difference can be accounted for by the fact that the average daily diet per pound of body weight was less, 45.90 calories as against 48.21 calories in the gelatin and 47.36 calories in the egg yolk-orange juice periods.

In the case of the controls, the infants in each instance being carried through periods of from eight to fourteen weeks on the same diet, the egg yolk-orange juice mixture group gained an average of 6.75 ounces a week and the gelatin group 5.82 ounces a week, notwithstanding the fact that the former received a somewhat smaller average amount of milk and sugar per pound of body weight. The cases are too few to afford a basis for drawing definite conclusions.

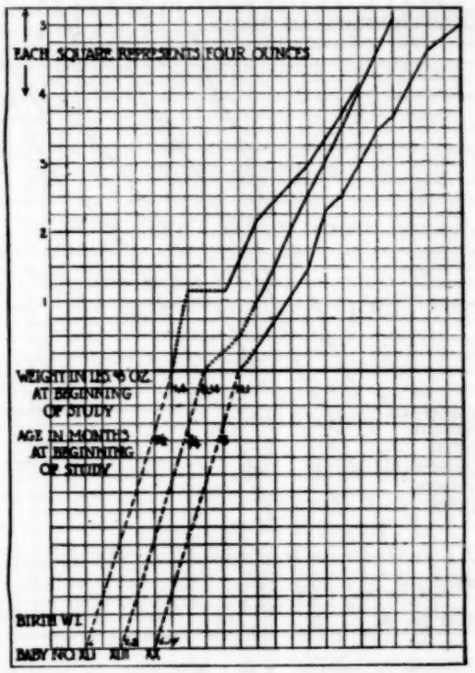

EACH SQUARE REPRESENTS FOUR OUNCES
WEIGHT IN LBS. & OZ. AT BEGINNING OF STUDY
AGE IN MONTHS AT BEGINNING OF STUDY
BIRTH WT.
BABY NO.

Chart 7.—Three infants from 3 weeks to 3½ months of age, egg yolk control cases.

In these control cases the gelatin milk mixture group of three infants showed hemoglobin losses of 4.8 and 13 per cent, respectively, while the three infants on the egg yolk-orange juice milk mixture showed a gain of 17 and 7 per cent, and the third infant remained the same. It will be noted that the three infants on the gelatin milk mixture all had comparatively high percentages of hemoglobin when the feedings were started, and although they showed losses when the feeding experiments ended all had good average readings for young infants at the end of our study. The two infants on the egg yolk-orange juice milk mixture that showed improvement in the hemoglobin curve, on the other hand, had comparatively low readings at the start, which placed them in a good position to be influenced by the high iron (egg yolk) content of their diet.

The characteristics of the stools following the feeding with the gelatin-milk mixture and the egg yolk-orange juice milk mixture could best be determined before the age when cereal and vegetable additions to the diet were indicated. In summarizing the results on the gelatin mixture it was concluded that there was a tendency toward the formation of rather foul smelling, firm stools which were grayish yellow and which at times were passed with difficulty. With the egg yolk milk mixture with orange juice added in the formula rather than between feedings, although not universally true, the stools were of a canary color and more plastic.

Clinical Notes, Suggestions and New Instruments

TREATMENT OF FIBROUS ANKYLOSIS OF KNEE AND ELBOW JOINTS *

S. D. CALONGE, M.D., SALT LAKE CITY

In fractures, dislocations, trauma or infections adjacent to or involving the articulations of the knee or elbow, temporary or permanent loss of function of these joints occurs in a large percentage of cases. In more than 90 per cent the disability is due to limited flexion caused by fibrous formation affecting the joint proper or the tendons and ligaments concerned in the leverage as applied in normal motion of these articulations.

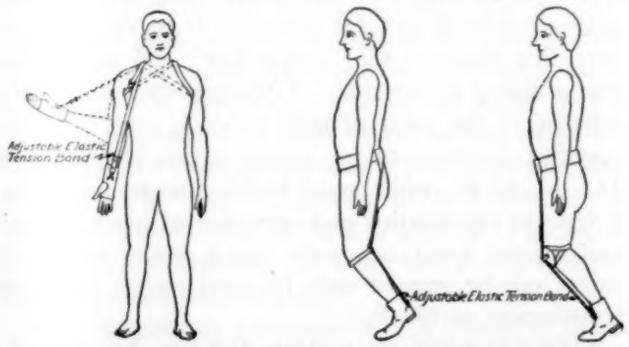
The appliances here shown are indicated in this class of cases. In a small percentage actual bony ankylosis occurs and must be dealt with as another surgical problem; therefore this class of cases will not be benefited by use of the appliances here presented.

The appliance for increasing the flexion of the elbow (as shown in the accompanying diagram) consists of: (1) a figure-of-eight shoulder strap and (2) a 1¼ inch wide elastic band passing from a point over the distal end of the clavicle to the stiff leather wrist cuff, to which it is attached by means of a snap and ring.

The tension can be regulated daily by either patient or physician and should be just enough to keep up a constant pull on the forearm without causing pain in the joint affected.

It will be noted that the attachment of the elastic tension band to the wrist cuff is just on the proximal side of the wrist joint; but in cases in which there is also lack of flexion in the wrist this attachment can be moved to a point just distal to the wrist joint, so that flexion in both wrist and elbow is brought about by the constant tension.

The arm can be extended at will by the patient. The appliance can be worn under the coat without attracting attention, and it should be worn while the patient is sleeping or working.



Appliances for treatment of fibrous ankylosis of knee and elbow joints: *A*, in position for increasing flexion of elbow; *B*, in position for increasing flexion of knee joint; *C*, in position for extension of knee joint.

In fact, it is my practice to have all patients wear it in this way, as much more satisfactory results are thus obtained. Constant tension is the sole object in its use. No form of passive motion can be so constantly applied in these cases as that of properly regulated elastic tension.

In cases in which the disability is due to limited power of extension, we use the wrist cuff alone and attach to the ring a simple 2½ pound shot-filled leather pad. This by gravity alone will correct limited extension in the majority of these cases if due to fibrous formation.

FIBROUS ANKYLOSIS OF THE KNEE JOINT

The appliance for correction of limited motion in the knee joint acts on the same principle as that applied to this condition in the elbow. It consists of:

1. A web belt 3 inches wide passing round the waist.
2. A sliding stiff leather sleeve through which the belt passes and to which is attached an adjustable elastic band 1½ inches wide. The lower end of this band is attached to the shoe top at a point level with the ankle joint by means of a snap and ring.
3. A guide band, which passes round the leg 2 inches below the knee when used for flexion. When used to promote extension this band passes through a guide on the leather knee cap as shown in the illustration.

The leather sleeve through which the belt passes is moved round to the front in line with the leg, and the tension band is attached to the front of the shoe top at the level of the ankle joint. Thus, with the addition of the leather knee cap, the same appliance can be used for either flexion or extension of the knee. At every step the action of the tension is applied to the affected joint. It can be worn under the trousers or while sleeping if a leather ankle cuff is used while the patient is in bed. The same precaution should be observed as in treatment of the elbow: the tension should not be increased to the point at which the pull on the stiffened joint causes discomfort to the patient.

These appliances are simple and inexpensive, and have given very satisfactory results during the six years of their use by physicians of my acquaintance.

* Read before St. Mark's Hospital Clinical Meeting, July 25, 1927.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION. W. A. PUCKNER, SECRETARY.

MESUROL.—Benzobis.—Basic Bismuth Methoxy Hydroxy Benzoate.—A basic bismuth salt of methoxyhydroxybenzoic acid, of variable composition, containing from 54 to 57 per cent of bismuth.

Actions and Uses.—Mesurol is proposed as a means of obtaining the systemic effects of bismuth in the treatment of syphilis (see New and Nonofficial Remedies, 1927, p. 99, Bismuth Compounds).

Dosage.—Mesurol is administered intramuscularly in the form of emulsion mesurol, 20 per cent. The initial dose is 0.5 cc., increased to 1 cc. at the second dose and continued until from eight to twelve doses have been administered.

Manufactured by the Bayer Company, Rensselaer, N. Y. (Winthrop Chemical Company, Inc., New York, distributor). U. S. patent 1,522,054 (Jan. 6, 1925; expires 1942). U. S. trademark 226,373.

Emulsion Mesurol, 20 per cent: A suspension of mesurol in sesame oil, each cubic centimeter of which contains mesurol equivalent to from 0.103 to 0.117 Gm. of bismuth (Bi).

Mesurol is a yellowish gray powder, insoluble in water and in most organic solvents.

Suspend about 0.05 Gm. of mesurol in 5 cc. of water, add 5 cc. of ammonium sulphide: the solid blackens. Suspend 0.1 Gm. in 5 cc. of water, acidify with hydrochloric acid and allow to cool: crystals appear, which, on addition of ferric chloride solution, causes the formation of a deep blue color; the crystals, after drying, melt at 152 C.

Agitate 1 Gm. of mesurol with 20 cc. of chloroform, filter the liquid and evaporate the filtrate to dryness: not more than 0.005 Gm. of residue remains (*free methoxy hydroxy benzoic acid*). Ignite 3 Gm. in a quartz crucible, cool, and cautiously add drop by drop just sufficient nitric acid to dissolve the residue when it is warmed; pour the acid solution into 100 cc. of distilled water, evaporate the filtrate on the water bath to 30 cc., again filter and divide the filtrate into 5 cc. portions; to one portion add an equal volume of diluted sulphuric acid: the liquid does not become cloudy (*lead*). Add an excess of ammonia water to another portion; the supernatant liquid does not exhibit a bluish tint (*copper*). Add to another portion diluted hydrochloric acid: a precipitate, insoluble in an excess of hydrochloric acid and soluble in ammonia water, is not formed (*silver*). Boil 1 Gm. in 70 cc. of water, add hydrochloric acid in small portions to the boiling suspension until the suspended particles dissolve, saturate with hydrogen sulphide and filter; evaporate the filtrate to a small bulk, cool, transfer to a platinum dish, add 2 cc. of sulphuric acid, evaporate to dryness and ignite: the residue weighs less than 0.005 Gm. (*alkali or alkaline earth salts*). Triturate about 0.05 Gm. with 0.1 Gm. of sodium salicylate and 5 cc. of distilled water, superimpose the mixture on 5 cc. of sulphuric acid: no pink or brownish red zone is observed at the line of contact (*nitrate*). Suspend 0.06 Gm. in boiling water, add diluted nitric acid in small portions until the suspended particles dissolve, cool, dilute to 50 cc., add 1 cc. of silver nitrate solution: a precipitate is not formed (*chloride*).

Transfer about 2 Gm. of mesurol, accurately weighed, to a quartz crucible; dry to constant weight at 100 C.: the loss in weight at 100 C. is not more than 1 per cent. Ignite the dried product and after cooling add 5 cc. of nitric acid drop by drop to the residue, warming until solution has been effected, evaporate to dryness, carefully ignite it at red heat, and weigh the resulting bismuth oxide: the residue corresponds to not less than 54 per cent nor more than 57 per cent of bismuth. The residue meets the requirements of Bettendorf's test, U. S. P. X, page 430 (*arsenic*).

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SATURDAY, OCTOBER 22, 1927

THE PASTEURIZATION OF MILK

Few modern public health measures have so completely won the confidence of sanitarians as the pasteurization of milk. The public health laboratory worker has satisfied himself that in a properly constructed and operated pasteurizing machine the ordinary pathogenic germs at all likely to be found in milk, including the tubercle bacillus, are surely destroyed. The practical health official has observed that, since the general introduction of pasteurization, there has been an almost entire disappearance of typhoid, septic sore throat, scarlet fever and diphtheria due to milk-borne infection. At present there is hardly any milk-borne disease in the United States save in the smaller towns and rural districts still using raw milk. The relatively insignificant number of milk-borne outbreaks in large cities in recent years have been without exception traced to that small fraction of the total milk supply that is delivered in the raw state.

During the past few months the experience with raw milk in Montreal [1] has forcibly recalled the dangerous condition from which the whole country has recently emerged. Some sanitary authorities have been tempted to regard the recent amazing decline in typhoid in large cities as due to the improvement in water supply that has been brought about through chlorination and filtration; there is no gainsaying that this has been an important factor. It must be remembered, however, that an improvement in the milk supply has been going on over this period and that both reforms must be given large credit for the reduction of disease. It is not possible to determine, and from a practical standpoint it is not significant, precisely how the credit should be apportioned.

In the actual carrying out of the pasteurizing process it is apparent now, as it always has been in sanitary matters, that eternal vigilance is the price of safety. Inattention to the proper operation of a pasteurizer may open the doors wide to serious infection. Since the whole point of the process consists in the destruction of living microbes by heat, it is plain that in order to secure efficiency all of the milk should be exposed to the killing temperature. Current legal and extralegal definitions of pasteurization emphasize the necessity of exposing "every particle of milk" or "every portion of the milk" to the chosen temperature. Recent careful examination by engineers of many types of pasteurizing machines has shown that even in the modern holding type of machine, now almost universally used, mechanical defects in the way of dead ends, leaky valves or unsatisfactory thermometers can sometimes be observed. The faults shown by inspection have been confirmed by detailed bacteriologic studies. Although it is difficult to secure epidemiologic evidence that mechanical defects in pasteurizers have actually led to specific contamination, there is no doubt that the possibility of infection from this source should be recognized and blocked. During the past year or so much effort has been devoted to the discovery and remedying of these mechanical defects, and great progress has been made, as shown especially in the notable studies of the Chicago Department of Health and the U. S. Public Health Service.[2]

These studies are doubly important in that they promise an end to the acrimonious controversy that has been waged between the representatives of certain large milk dealers and a group of public health officials. The fact is that the temperature necessary for safe pasteurization is not far removed from the temperature that destroys the "cream line" and injures the marketability of the milk. Consequently milk dealers, mindful of the value of their product, prefer that the specified temperature for pasteurization be not above 142 or 143 F., while some health officers, noting the defects in construction and operation of much existing pasteurizing apparatus, insist that a proper margin of safety can be secured only by specifying a minimum temperature of 145 F.

Strong bacteriologic evidence has been brought forward to show that under proper conditions the lower temperature is adequate. In the well known experiments conducted at Endicott, N. Y., in 1922-1923 by North, Park, Rosenau, Wadsworth and others, it was found that the tubercle bacillus was killed in commercial pasteurizing machines by exposure for thirty minutes to 138 F. Temperatures higher than from 142 to 143 F. would seem to be necessary only if there is lack of uniformity or regularity in the heating process. Since the destruction of the cream line is the cause of great objection on the part of the consumers and tends to create prejudice against the pasteurizing process, it is to be hoped that the work now proceeding rapidly in rehabilitating pasteurizing apparatus will be

1. Report of Board on Typhoid in Montreal, General News, J. A. M. A. **89**: 217 (July 16) 1927.

2. Putnam, G. W.: Am. J. Pub. Health **17**: 121, 1927. Frank, L. C.; Moss, F. J., and Le Fevre, P. E.: Pub. Health Rep. **42**: 1152 (April 29) 1927.

successful and allow the use of the lowest temperature that is thoroughly consonant with safety.

The early prejudice among nutritional experts against pasteurized milk has largely melted away. Proper pasteurization does not injuriously affect taste, appearance or digestibility; on the contrary, the tendency of heat to make the curds smaller is perhaps an aid to digestion. Some observers at one time were inclined to lay stress on the undoubted diminution in the antiscorbutic vitamins that is caused by heating. At the present day this gives little concern since the inclusion—now usual—in the infant's dietary of orange juice or tomato juice entirely meets this objection.

On the whole, modern well controlled pasteurization marks a distinct sanitary advance. While not an unmixed benefit, as witnessed in the increased cost of milk and the consequent tendency of the consumers to restrict this valuable article of diet, pasteurization unquestionably prevents a large amount of infectious disease among both adults and children. It is impossible to assign to any health measure a precise share in bringing about the great reduction in infant mortality that has occurred in this country in the last fifteen years, but there is no doubt that the part played by pasteurization has been important.

MIKULICZ'S DISEASE

Many years ago the late German surgeon Mikulicz described a type of chronic parotitis affecting the salivary and sometimes the lacrimal glands. The enlargement of the glands is symmetrical and the inflammation is painless. As has happened in numerous other instances in the history of medicine, no sooner was a carefully prepared description of the malady published than reports of cases corresponding to it rapidly became available. The first recognition of a disease entity seems to require the insight and originality of a clinical master mind; thereafter that which was formerly overlooked becomes commonplace.

The inflammatory enlargement of a glandular tissue does not of itself entitle the condition to be placed in the category of a disease *sui generis,* particularly when, as in the cases corresponding to Mikulicz's description, some are benign and self limited whereas others may rapidly progress to a fatal outcome. For some time there has been prevalent a view championed by Napp [1] that the so-called Mikulicz disease is in reality a symptom complex that may be produced by a variety of causes, such as leukemia, pseudoleukemia, atypical lymphomatosis, and tuberculosis. In 1904, Campbell Howard [2] attempted a simple classification of all the cases presenting Mikulicz's syndrome that he could find in the literature, and on its basis he elaborated a theory that has dominated the literature on the subject since that time. He divided all the cases into three groups, with the captions (1) Mikulicz's disease proper, (2) pseudoleukemia and (3) leukemia. In his first group he included all those patients who presented swelling of the lacrimal or salivary glands but no lymphadenopathy, no enlargement of the spleen, and no significant alterations in the blood. The question is thus raised as to whether Mikulicz's disease proper is not a potential leukemia.

The most recent study of the subject is by Schaffer and Jacobsen [3] of the Johns Hopkins Hospital. They reviewed the cases of the Mikulicz syndrome seen in the Baltimore institution and venture a classification dividing them into the two groups: (1) symptomatic and (2) Mikulicz's disease proper. The latter includes only those instances of the syndrome in which the most painstaking search has failed to discover any of the known possible exciting factors. Schaffer and Jacobsen regard it as proved that leukemia, lymphosarcoma and tuberculosis can produce this symptom complex, whereas the proof that syphilis can produce it is less convincing. The interpretation of the etiology of the Mikulicz disease proper remains in doubt. The most likely hypothesis, however, still seems to be that of a low-grade infection, running a slow course, with spontaneous termination. The renewal of interest in the condition here represented should provoke a most effective investigation of its etiology and presently lead to a much clearer understanding of the causative factors involved.

THRUSH

The parasitic stomatitis popularly known as thrush is generally regarded as readily amenable to treatment and easily eradicated. The disease is readily detected and the etiologic agent, the fungus *Oidium albicans,* is well known. The incidence of thrush is most common in young infants, a feature that helps to focus attention on the most probable places of its occurrence. Despite the fact that clinically thrush is commonly regarded as an innocuous infection, readily curable or self-limited in duration, recent experiences have served to modify this view. Thus the persistence of an epidemic of thrush in new-born infants, which developed and spread in spite of apparently active and adequate precautions in a San Francisco hospital,[4] has served to focus attention on some heretofore mistaken considerations. The usual precautions as to prophylaxis and cleanliness had been taken without averting the continuance of infections. Numerous common opportunities of infection were ruled out; namely, bottles, nipples, formulas, water, clothes and dressings, defective sterilization, maternal infection from breasts, and oral traumatization. The source was finally traced to accumulations of dust in

1. Napp, O.: Ueber die Beziehungen der Mikuliczschen Erkrankung zur Tuberkulose, Ztschr. f. Augenh. **17**: 513, 1907.
2. Howard, C. P.: Mikulicz's Disease and Allied Conditions, Internat. Clin. **1**: 30, 1909.
3. Schaffer, A. J., and Jacobsen, A. W.: Mikulicz's Syndrome, Am. J. Dis. Child. **34**: 327 (Sept.) 1927.
4. Faber, H. K., and Clark, E. B.: Prevention and Treatment of Thrush (Oidial Stomatitis), Am. J. Dis. Child. **34**: 408 (Sept.) 1927.

places difficult of access and invisible to casual inspection. Removal of these accumulations was immediately followed by cessation of the epidemic.

In the course of the studies provoked by the persistence of the San Francisco epidemic, Faber and Clark [4] made several important observations, which deserve widespread recognition. Therapeutic efforts have heretofore been directed vigorously toward preventing acidity in the mouth of infected persons and creating an alkaline condition. The new experiments show that *Oidium albicans* is adapted to growth in a wide range of hydrogen ion concentration, multiplying freely at the highly alkaline point of p_H 10, which is greater than could be maintained in the mouth for more than a brief time. Aside from securing oral cleanliness, treatment has usually consisted in the past in the local use of alkaline and mild antiseptic applications. Solutions of boric acid have been widely recommended. Faber's tests indicate that the growth of the offending fungus is barely inhibited by boric acid, in saturated solutions of which it survives for considerable periods (over a week). It is killed by 1:250 solution of formaldehyde but not by 1:500. The rather feeble penetrating powers of the substance and its rapid dilution by the secretions of the mouth, especially abundant in the presence of thrush, make it doubtful whether an effective concentration could be maintained long enough to sterilize the areas of infection, even when a solution stronger than 1 per cent solution of formaldehyde is used.

As an outcome of their observations, Faber and Clark protest against the use of boric acid solutions, still a common practice, for the purposes of cleaning babies' mouths and eyes and the mothers' breasts. They are confident not only that this procedure is without value but also that it may at times be responsible for the propagation of infection. The sense of security which its use seems to give is wholly without foundation, and has doubtless led to the neglect of useful precautions. In the case of thrush the fungicidal efficacy of several of the newer dyes has been investigated. They tend to approach the requirement of the ideal antiseptic for this purpose in that they combine rapid penetration with minimal toxicity. Methyl violet was early tested; acriflavine and mercurochrome-220 soluble also have had favorable reports. The greatest promise, however, is centered in the use of gentian violet, of which a 1:25,000 solution destroys *Oidium albicans*. The dye, in 1 per cent aqueous solution, must be freshly prepared (not more than a few days old) and must be applied generously, first to the affected area and then over the tongue and in the buccogingival folds. The treatment must be repeated once or twice daily for at least three successive days, and, if possible, every other day thereafter for from one to two weeks. The mother's breasts should be carefully cleansed with soap and water before each nursing, and the first few drops of milk discarded to prevent reinfection. Incidentally, Faber and Clark call attention to the occasional occurrence of oidial infections in adults as a possible source of thrush in infants. Almost any of the mucous membranes may be affected, vaginal infection being not uncommon.

Current Comment

FIFTIETH ANNIVERSARY OF THE MASSACHUSETTS MEDICO-LEGAL SOCIETY

The Massachusetts Medico-Legal Society was founded, Oct. 5, 1877, at the same time the present system of medical examiners in Massachusetts took effect. The society may well be congratulated on its record, as it has been and is an important factor in maintaining a superior medicolegal service for the state. For the country at large it is the outstanding example of a successfully organized effort to advance medicolegal knowledge and practice. For various reasons, forensic medicine in the United States remains largely in a rudimentary and unorganized state. Under the archaic system of county coroner which still prevails in most states, the routine practical medicolegal work is entrusted for the most part to political spoilsmen who have not the required fitness or interest for their task. The standards of postmortem examinations and records in most places are disgracefully low. There has been and is a lack of interest on the part of officials, physicians and lawyers in building up the various departments of forensic medicine, which consequently falls far short of its possible social value. The selection and payment of so-called expert witnesses by litigants is a most serious obstacle to progress and it is true that "the uncertain and contradictory character of expert testimony has weakened its force and effect in the trial of causes." With the single exception of the Massachusetts Medico-Legal Society and its journal, there are apparently no societies or periodicals of any consequence devoted to medicolegal practice and research. A few textbooks on forensic medicine have been published, it is true, but in other respects the contributions to the subject are scanty and scattered, and show, with notable exceptions, little evidence of fruitful research. In the medical schools the formal teaching in this field is perfunctory and as a rule wholly didactic; as yet no effort has been made in any of our universities to coordinate and develop actively the medicolegal instruction in their schools of law and medicine. Finally, this indictment may be closed by emphasizing that the provisions for the work in medicolegal practice, in the larger sense, are everywhere utterly inadequate. There is in this whole country not a single fully equipped and adequately manned medicolegal institute. Medicolegal problems are not, however, diminishing in number or in importance and there is increasing need for better and better medicolegal work and for a more active development of forensic medicine in the United States. Owing to constant progress in the contributing sciences—clinical medicine, pathologic anatomy, chemistry, microbiology, immunology—

there is particular and continuous need of integrating these sciences in their medicolegal relations. The situation demands not only replacement of the coroner system by one far more effective, such as the Massachusetts system, but also the establishment of fully equipped medicolegal institutes designed to meet the needs of city and state.

DO OHIO VOTERS NEED AN INTELLIGENCE TEST?

Ohio voters are about to be subjected to an intelligence test. At the polls, November 8, they are to vote on a bill, initiated by chiropractors, to abandon the present system of examining and licensing would-be practitioners of chiropractic in Ohio in favor of a new system. The proposed bill removes the restrictions that now prevent chiropractors from treating smallpox, scarlet fever, diphtheria, tuberculosis, syphilis and other communicable diseases. Ohio has today a law regulating the practice of medicine—an admirable law admirably administered, and adequately supported by court decisions. Under that law chiropractors may and do obtain licenses to practice their calling. In the process of examination and licensing under the present law there has never been any undue severity of standards or any unfairness to chiropractic examinees. Many of them are now contentedly following their vocation in the state. Some chiropractors, however, lack even the qualifications necessary to enable them to enter the examinations now conducted. Others doubtless realize their inability to pass such examinations even if they were admitted. This is the group that seeks a new law. The intelligent voter will know that chiropractic is not competent to prevent or to treat syphilis, gonorrhea, tuberculosis, scarlet fever, smallpox and other communicable diseases. Is it desirable now to remove the limitation deemed necessary when the present law was enacted? Has chiropractic by research developed new discoveries? Chiropractic, the voter will soon find, still maintains its original tenet that all diseases are the result of the displacement of one or more of the bones of the spine. Without such a displacement, according to chiropractic doctrine, neither cancer, nor diabetes, nor heart disease, nor insanity, nor blindness nor any other disease can exist. The bill proposed cannot be amended, in the course of its enactment, through the initiative. To pass it in its present form will expose the people of the state to the spread of communicable diseases of all kinds. The answer given by the voters of Ohio when they cast their votes on the pending bill, November 8, may be accepted as a fair indication of the intelligence of the Ohio electorate.

Nervous and Muscular Fatigue Closely Connected.—We cannot set definite limits where nervous fatigue ends and muscular fatigue begins, or vice versa. They are inevitably bound up together, since every voluntary muscular act is due to the stimulus received through the nerves from the central nervous system. Of the nature of the nerve impulse or of the energy generated in the centers, little is agreed on, excepting that some form of electric activity is involved.—Goldmark: Fatigue and Efficiency, p. 27.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Personal.—Dr. Bernard F. McElroy, San Francisco, has been appointed medical director of the Market Street Railway Company, it is reported. —— Dr. Guy W. Clark, formerly assistant professor of pharmacology in the University of California Medical School at Berkeley, has resigned to become director of the pharmaceutic department of the Lederle Antitoxin Laboratories. —— Dr. James W. Nicholson has been appointed city health officer of Porterville to succeed Dr. Harry J. Willey.

Theory on Nature of Light.—Gilbert N. Lewis, Ph.D., professor of chemistry and dean of the college of chemistry, University of California, in articles in the *Proceedings of the National Academy of Sciences*, supports the hypothesis that radiant heat and all forms of radiation are carried by corpuscles which are shot out from the body and which pursue definite paths according to mechanical laws. Dr. Lewis has been working for years to develop the theory of Einstein that radiant energy consists not of waves but of particles which travel in straight lines from the source. To this he has added the hypothesis that the corpuscles of radiant energy are a new type of atom which he calls photons and that they do not disappear when light is absorbed but remain constituents of the absorbed substance until it in turn emits radiant energy and the photons are once more shot out. The conflicts which this hypothesis appeared to have with some laws of spectroscopy and radiation have been removed, it is said, by the work of Professor Lewis published in his papers "The Entropy of Radiation" and "A New Equation for the Distribution of Radiant Energy."

New Hospital for Disabled Volunteer Soldiers.—A fireproof hospital was formally opened recently at the Pacific Branch of the National Home for Disabled Volunteer Soldiers at Sawtelle. It comprises a central clinical and administration building, two six-story wings, and a service building. They are constructed of concrete and steel with brick facing. There is a roof garden in each wing, large sun parlors at the end of each floor, single rooms for patients, four-bed wards and a sixteen-bed ward on each floor. The hospital has been well equipped, and will maintain a complete service including general medical and surgical, eye, ear, nose and throat, orthopedic, genito-urinary and neuropsychiatric departments. The cost of construction was $1,500,000, which was appropriated by congress. The governor of the home is Col. John A. Hadler, and the surgeon, Col. James A. Mattison.

CONNECTICUT

Health Films for Winter Nights.—The Connecticut State Department of Health has forty-three health films available for which requests are being received almost daily throughout the state. There is one series of four films on "How Life Begins," and other films on the subject of adult health examinations, child health and infant care, prenatal care and the control of several infectious diseases. There is a charge of $5 for this service. Inquiries should be addressed to the state department of health, Hartford.

DISTRICT OF COLUMBIA

Dr. Hrdlicka to Give the Huxley Lecture.—Dr. Ales Hrdlicka of the Smithsonian Institution, Washington, sailed, October 3, for Europe, to deliver the Huxley Lecture before the Royal Anthropological Society in London, November 8, on which occasion he will be presented with the Huxley Memorial Medal for his "great service to anthropologic science, not merely in America, but throughout the scientific world." This medal has been given to an American once

before. Dr. Hrdlicka in the interim will survey in France, Italy, Belgium, Germany and England the recent achievements in physical anthropology, and will examine the remains of early man in some of the European museums. He will return, November 18.

"The Fossils" Honor Dr. Richardson.—More than fifty years ago, sixty-two boys organized in Philadelphia the National Amateur Press Association, which, as time went on, came to be known as The Fossils. They were the editors of little papers of different sizes which discussed everything and which back in the seventies numbered several thousand. This truly boyish activity largely ceased to exist in the middle eighties, and to perpetuate the friendships which grew up among these editors of amateur journals, to keep alive the memory of those years by occasional reunions, and to otherwise benefit by the fellowship of these once youthful editors, printers, publishers and writers, are among the objects of The Fossils. The organization was recently incorporated under the laws of the state of New York and negotiations have been conducted whereby the bound volumes of these contributions of youth, numbering about 45,000 papers, will be placed in the Library of Congress. There are many noted members of this unique organization, among whom are Thomas A. Edison; Col. George Harvey, former ambassador to the Court of St. James; Frank B. Noyes, president of the Associated Press; State Senator Seneca C. Beach, Los Angeles; H. Gordon Selfridge, London; Cyrus C. Curtis, Wyncote, Pa.; Charles Scribner, New York; U. S. Senator George Moses, and the Rev. Charles S. Macfarland. The president of the organization for 1927-1928 is Dr. Charles W. Richardson, Washington, D. C., a member of the Board of Trustees of the American Medical Association, who was guest of honor at The Fossils' dinner, New York, September 6. In his presidential address, Dr. Richardson said:

> To our generation came the peak of the amateur journalist efforts, in all that it implied, as the stimulus in shaping the industrial and mental activities of the generation that developed immediately succeeding the Civil War. To have been a member of that generation was a great privilege to each and every one that now stands as a member of The Fossils. The touch of mechanical art, of professional effort and business imparted in our amateur efforts was not only of great personal pleasure, but no doubt had considerable influence in shaping the course of our future lives. How happy I am to have been a boy of that period.

ILLINOIS

Society News.—Dr. Manley J. Capron, Battle Creek, Mich., addressed the Adams County Medical Society, Quincy, October 10, on "Pernicious Anemia."——Among other speakers at the meeting of the Iowa-Illinois Central District Medical Association meeting at Moline, October 13, was Dr. Porter P. Vinson, Rochester, Minn., whose subject was "Indications for Bronchoscopy."

Chicago

Social Agencies in Chicago.—There are 170 public and private charitable and social work organizations represented on the Chicago Council of Social Agencies, which was formed to provide a channel for coordination of work without duplication of effort. The report of the council, which held its annual meeting, October 14, states, it is reported, that one of the problems in the social welfare field which needs more attention is the coordination into a composite whole of the facilities now offering medical treatment and health supervision to persons not able to buy it at the established rate of cost. There seems to be enough organizations to care for the poor, the dependent children and the aged, but more should be learned about the adequacy of the services for the care of the sick and for constructive health work. There should be created, the report continues, a permanent statistical reporting system to give social work the basic data on which scientific calculations may eventually be made, as well as statistics on the extent of sickness, and in order to furnish a means of appraising the effectiveness of the various efforts at prevention and alleviation. Mr. Edward L. Ryerson, Jr., was elected president of the council.

Society News.—An addition to the Spalding School for Crippled Children to cost $1,000,000 is under construction; it will increase the enrolment to 1,500.——Dr. Benjamin H. Hager, Mayo Clinic, Rochester, Minn., will address the Chicago Urological Society, October 27, at the John B. Murphy Memorial, 50 East Erie Street, on "Urography."——Dr. Ralph C. Matson, Portland, Ore., will address a joint meeting of the Chicago Medical Society and the Chicago Tuberculosis Society, October 27, at the Medical and Dental Arts Building, Wabash Avenue and Lake Street, on "Operative Collapse Therapy in the Treatment of Pulmonary Tuberculosis."——Dr. Samuel T. Orton, Iowa City, Iowa, will address a joint meeting of the Chicago Society of Internal Medicine and the Institute of Medicine of Chicago, City Club, October 28, on "Problems in Cerebral Dominance." Members of the Chicago Medical Society are invited.——At a joint meeting of the National Committee for the Prevention of Blindness and the Chicago Ophthalmological Society, October 14, Dr. Edward Jackson, Denver, spoke on "Prevention of Blindness from the Standpoint of the Ophthalmologist."——Dr. Edward W. Ryerson addressed the Chicago Orthopedic Club, October 14, on "Stabilizing Operations on the Foot."——The Chicago Gynecological Society and the Chicago Surgical Society held a joint meeting, October 14, at which Prof. S. A. Gammeltoft, University of Copenhagen, read a paper on "Conduct of Normal Labor" and Dr. Henry S. Plummer, Rochester, Minn., spoke on "Thyroid."——Dr. Roswell T. Pettit, Ottawa, Ill., addressed the Chicago Roentgen Society, October 13, on "Some Common Mistakes in the Making and Interpretation of Roentgen-Ray Films of the Chest in Pulmonary Tuberculosis."

MARYLAND

State Meeting in Hagerstown.—The Medical and Chirurgical Faculty of Maryland will hold its semiannual meeting in Hagerstown, October 25-26. A reception will be given the first evening by the president elect, Dr. Peregrine Wroth, Jr. The president of the Washington County Medical Society, Dr. Ralph S. Stauffer; Dr. Thomas S. Cullen, Baltimore, president of the Medical and Chirurgical Faculty of Maryland; Dr. Dean Lewis, Baltimore, and Alexander Armstrong will speak. A paper on "Chronic Encephalitis" will be read by Dr. Andrew C. Gillis; "Problems Presented by the Acute Surgical Abdomen" by Dr. Elliott H. Hutchins; "The Physician and the Youth, Psychiatric Consideration" by Dr. Harry S. Sullivan, and "Advances in Gynecology of Interest to the General Practitioner" by Dr. Emil Novak.

Society News.—The student bodies of the schools of medicine, dentistry, pharmacy and law of the University of Maryland were addressed at a smoker, October 7, by the deans of the schools and the president of the university, Raymond A. Pearson, LL.D.——Among others, Dr. Grover C. Ney addressed the Baltimore City Medical Society on "The Follow-up Clinic in Surgery," and Dr. Robert V. Seliger on "Observations of Cases of Pachymeningitis Hemorrhagica Externa."——The Garrett County Orthopedic Society, recently organized, is the first county organization of its kind in the state; a committee was appointed representing various nonmedical organizations to help care for the needs of crippled children.——Preliminary plans have been completed for the opening of the mental hygiene clinic to be operated in conjunction with the University of Maryland School of Medicine. Dr. Ralph C. P. Truitt, the director, will have as assistants Dr. George H. Preston, director, Children's Psychiatric Clinic, Richmond, Va., and Miss Edith Bain, Lexington, Ky.——A joint meeting of the Maryland Psychiatric Society and the Washington Society for Nervous and Mental Diseases was held at Towson, October 20; Dr. Ralph C. P. Truitt spoke on "The Community Mental Clinic," and Dr. Eleanora B. Saunders on "Psychoses Associated with the Puerperium."——Six foreign surgeons will read papers before special clinics at Johns Hopkins Hospital and the University of Maryland, October 24. This will be community health day to inform the public about modern scientific medicine. The surgeons will be Drs. Garnett Wright, Manchester, England; S. A. Gammeltoft, Copenhagen; Otto J. Kauffmann, Birmingham, England; Giuseppe Franchini, Bologna; I. Snapper, Amsterdam, and Sigmund Frankel, Vienna.

MASSACHUSETTS

Society News.—The winter training course for medical officers of the army reserve corps opened, October 12, with a dinner at the University Club, Boston. The committee on arrangements requested each one in attendance to bring a friend. The chairman of the meeting was Dr. David D. Scannell. The 1926 course was considered a success.——Among the speakers at the eighty-sixth quarterly meeting of the Essex North District Medical Society at the State Infirmary, Tewksbury, October 19, were Drs. Charles L. Trickey and Charles J. Carden, on mutism in mental diseases with cases; Dr. Albert Warren Stearns, Boston, "Social Problems in Psychiatry," and Dr. John N. Birnie, Springfield, president of the Massachusetts Medical Society. There was a woman's hospital clinic by Dr. George A. Pierce, and a man's hospital clinic by Drs. Arthur K. Drake, George Herbert Cleary, William R. Izzo and Hardy Phippen, Salem; a

talk on congenital syphilis by Dr. Samuel A. Dibbins, and a tuberculosis clinic by Dr. James F. Lawlor. This was a joint meeting with the Middlesex north and east societies and Essex south.

Dr. Lucien Howe Awarded Medal.—The Leslie Dana Gold Medal, which is awarded annually to him who did most for the conservation of vision in the preceding year, was presented to Dr. Lucien Howe of Buffalo, at St. Louis, October 17. Dr. Howe was selected by the National Committee for the Prevention of Blindness in cooperation with the Missouri Association for the Blind, through whom the medal is offered by Leslie Dana of St. Louis. In his presentation speech the president of the national committee referred to Dr. Howe as the father of ophthalmia neonatorum legislation. In recent years, a reduction of 50 per cent in the frequency of ophthalmia neonatorum as a cause of blindness had occurred over the country at large. For this no one is more responsible, it was said, than Dr. Howe. Until the organization of a formal movement of preventing blindness in the United States, 28 per cent of the children in schools for the blind lost their sight through ophthalmia neonatorum. Dr. Howe has devoted more than fifty years to work having to do with the conservation of vision. Recently he gave $250,000 toward the establishment of a memorial institution at Harvard University, Boston, to be known as the Howe Laboratory of Ophthalmology, of which he is the first director.

NEW HAMPSHIRE

Annual Meeting of Surgical Society.—The New England Surgical Society held its annual meeting in Manchester, September 30-October 1. The New Hampshire members of the society conducted clinics at the Elliot Hospital in the morning. Following a luncheon at the hospital, scientific papers were read at the Carpenter Hotel. There was a banquet at the Manchester Country Club the evening of the first day, at which the guest of honor was U. S. Senator George H. Moses. Saturday was devoted to a continuation of the scientific program. Dr. George C. Wilkins, Manchester, was chairman of the committee of arrangements. Among the officers of the society are Drs. Daniel F. Jones, Boston, president; William W. Townsend, Burlington, Vt., vice president; John M. Birnie, Springfield, Mass., secretary pro tem, and Peer P. Johnson, Beverly, Mass., treasurer.

NEW JERSEY

Hospital News.—About 2,500 persons attended the ceremony of laying the cornerstone of the Bayonne Hospital, Bayonne, October 12, the funds for which were raised in a campaign last year. Dr. Lucius F. Donohoe, medical director of the hospital staff, was master of ceremonies. Among the speakers were Dr. John B. Morrison, secretary, Medical Society of New Jersey, and Dr. George H. Sexsmith.

Health at Trenton.—Telegraphic reports to the U. S. Department of Commerce from sixty-six cities with a total population of about 29 million, for the week ending October 8, indicate that the highest mortality rate (21.7) was for Trenton, and that the rate for the group of cities as a whole was 11.1. The mortality rate for Trenton for the corresponding week last year was 14, and for the group of cities, 11.4.

Society News.—Dr. Edward L. Bauer, professor of pediatrics, Jefferson Medical College, Philadelphia, addressed the Atlantic County Medical Society, Atlantic City, October 14, on "High Lights on Our Present Knowledge of Infantile Paralysis," and Dr. Howard Lilienthal, formerly of Cornell University Medical College, New York, on "What Surgery Can Do for Pulmonary Tuberculosis."——Dr. Maximillian Danzis was elected president of the Essex County Medical Society at the one hundred and twelfth annual meeting, Newark, October 4.

Annual Tuberculosis Meeting.—The twenty-first annual meeting of the New Jersey Tuberculosis League will be at the Academy of Medicine, Newark, October 21-22, under the presidency of Dr. Marcus W. Newcomb, whose address will be on "Periodic Medical Examinations." Representatives of cooperative agencies will hold a luncheon conference. There will be a visit to the Essex Mountain Sanatorium; a play presented by the Drama Study Club of the East Orange High School, entitled "Dreams to the Rescue," which was awarded first prize by the state league in a play writing contest; an address by Dr. Allen K. Krause, Baltimore, on "Trends in the Treatment of Tuberculosis," and a motion picture prepared by Dr. Lewis Gregory Cole, New York, on pulmonary tuberculosis. A "publicity clinic," Saturday morning, will be held by a representative of the National Tuberculosis Association under the general divisions of (1) the spoken word; (2) the written word; (3) exhibits, and (4) statistics.

NEW YORK

Smallpox on Indian Reservation.—Seven cases of smallpox in one family were reported at Red House, recently. The outbreak was traced to an Indian from outside Cattaraugus County. The health department, assisted by the nurse on the reservation, vaccinated 210 persons, and the state and county physicians and nurses vaccinated 424 others in the community surrounding the afflicted family. The Allegany reservation is said to be one of the best vaccinated areas in the state, although in Cattaraugus County as a whole, a small percentage of the population has been successfully vaccinated in the last two years.

Personal.—Dr. Vernon C. Branham was appointed medical director of the state committee on mental hygiene of the State Charities Aid Association, effective, September 15; Dr. Branham was formerly on the staff of the government hospital for the insane, Washington, D. C., psychiatrist of the state commission for mental defectives, and in the state department of mental hygiene.——Dr. Jacob Buckstein has been appointed an attending gastro-enterologist at the Rockaway Beach Hospital.——Dr. Reuben Wilson Shelley resigned, effective, October 15, as superintendent of the Niagara County Sanatorium, Lockport, and was succeeded by Dr. O. C. Reeve.

Society News.—The annual meeting of the Suffolk County Medical Society will be held, October 27, at Riverhead, not, however, in the Griffin House, where it has met for fifty years, for it is no more. There will be a dinner at noon, a scientific paper and a discussion of the activities of the society.——The Hampton Medical Society sponsored a clinic on pediatrics, August 29, which was conducted by Dr. William St. Lawrence, New York. Twenty-four mothers and members of the parent-teacher association were present by the invitation of the medical society. This was the second series of clinics, the first being held in Bellport.——Dr. James E. Sadlier, Poughkeepsie, president of the Medical Society of the State of New York, addressed the Wayne County Medical Society, September 21, at Lyons on activities of the state society; Dr. William D. Johnson, Batavia, on "Surgery of the Handicapped Patient," and Dr. Floyd R. Wright, Clifton Springs, on "Some Fallacies Old and New About Diabetes." Dr. William H. Sweeting, Savannah, president of the society, presided. ——The Essex County Medical Society notified the Cattaraugus County Medical Society that at their fall meeting, Ticonderoga, October 4, a resolution was adopted approving the action taken with regard to the health demonstration which is being conducted in Cattaraugus County by the Milbank Fund.

New York City

Dr. Francis to Give Harvey Lecture.—The first Harvey Lecture of the season will be given at the New York Academy of Medicine by Dr. Edward Francis, surgeon, Hygienic Laboratory, U. S. Public Health Service, Friday evening, November 11, on "Tularemia."

Sound Amplified Millions of Times.—At the Electrical and Industrial Exposition, Grand Central Palace, October 18, a demonstration of the amplification of sound by means of devices was presented and broadcast over Station WRMY. Some of the sounds amplified were the normal human heart beat and the heart beat under stress of excitement and physical effort, cracking knuckles, molecular sound when a tin rod is bent, breathing, writing a letter, and the ebullition of ginger ale. Some sounds, it is said, were amplified twenty million times. The act of breathing, for example, was described as sounding like the rushing of an express train. The experiments were conducted in the presence of a group, and included testing of the hearing of the visible auditors in the broadcasting room by means of a new radio oscillator.

Government Uses Seized Alcohol to Make Paint.—An order was issued by Federal Judge Thacher, October 11, directing that about 70,000 gallons of seized alcohol and about 1,400 cases of champagne be distributed to the army, navy, U. S. Public Health Service and other departments of the government. The navy is to receive 40,000 gallons of seized grain alcohol to be used in making paints and varnishes. The National Museum is to get 1,500 gallons for the preservation of specimens. The army is to get the champagne to be used in hospitals for patients on the recommendation of physicians, and the Public Health Service and the U. S. Veterans' Bureau each about 3,000 gallons of grain alcohol for medicinal pur-

poses. The coast and geodetic survey will receive about 150 gallons and the geographic survey about 200 gallons for photographic purposes.

Milbank Fund Finances Ventilation Program. — About a year ago, the New York State Commission on Ventilation was reorganized and named the New York Commission on Ventilation with the object of having a disinterested scientific group to conduct investigations of the problems of school ventilation. The Milbank Memorial Fund financed its initial work, as well as the present program. From 1913 to 1917, the New York State Commission on Ventilation carried on studies in some of the public schools of New York City, collecting data that were published in 1923. Dr. Rufus I. Cole, director, Hospital of the Rockefeller Institute for Medical Research, has recently been appointed a member of the commission, according to the announcement of the chairman, Charles-Edward A. Winslow, professor of public health, Yale University. Other members of the commission are Frederic S. Lee, Ph.D., research professor of physiology, Columbia University College of Physicians and Surgeons, New York; George T. Palmer, Dr.P.H., director, division of research, American Child Health Association; Earl B. Phelps, B.S., professor of sanitary science, Columbia University College of Physicians and Surgeons; Edward Lee Thorndike, LL.D., professor of educational psychology, Teachers College, Columbia University, and Dwight D. Kimball, consulting engineer, New York. Mr. Thomas J. Duffield is the executive secretary, and the office is at 370 Seventh Avenue, New York.

PENNSYLVANIA

County Hospital at Upper Darby Opens.—A three day celebration marked the opening of the Delaware County Hospital at Upper Darby, recently, when the $385,000 institution was formally presented to the people of the county. The new hospital is located in a rapidly growing suburban community and a second unit probably will be needed in the near future. It has now fifty-six beds, fourteen bassinets, a complete surgical department, and pathologic, bacteriologic, serologic, chemical and roentgen-ray laboratories. A prenatal clinic has been established for expectant mothers, but facilities for an outpatient department are limited. The state department of health conducts here tuberculosis and genito-urinary clinics. Although the hospital was built largely by contributions from the public, the state legislature has appropriated $25,000 to defray the expenses of free patients for a two year period and the governor approved the appropriation in the amount of $10,000. It is available, however, only as free service is rendered by the hospital. In selecting the staff, the trustees sent application blanks to all physicians practicing in eastern Delaware County. Eighty-two applications in all were received. The appointments were made for a period of one year. The movement to organize the Delaware County Hospital originated with a small group of citizens; Thomas Conway, Sr., donated the site, and 7,926 persons contributed toward providing the building. There is a need for bequests to establish free beds and for other purposes. Opportunities for gifts as memorials are available. The trustees will be pleased to give information as to the amount required to furnish articles of equipment for the institution which have been installed but are not yet paid for. These sums range from $25 to $6,500. The president of the hospital is Thomas Conway, Jr., Franklin Trust Building, Philadelphia.

Philadelphia

Society News.—A symposium on the early symptoms and signs of cancer was presented before the Philadelphia County Medical Society, October 12, by Drs. Jay F. Schamberg, Robert H. Ivy, John B. Deaver, Chevalier Jackson, George P. Muller, Henry L. Blockus, Collier F. Martin, Benjamin A. Thomas and Floyd E. Keene.——A paper was read before the Philadelphia Academy of Surgery, October 10, by Dr. Irvine M. Boykin, on "Abdominal Wounds; Their Making and Closure."——Dr. Robert F. Ridpath addressed the Philadelphia Laryngological Society, October 11, on "Voice Production."——Among others, Dr. Robert P. Sturr addressed the Philadelphia Pediatric Society, October 11, on "Value of Early Diagnosis and Treatment of Thymus Gland Enlargement."——Papers were read before the Pathological Society of Philadelphia, October 13, by Drs. Stuart Mudd and Fred D. Weidman, respectively, on "Surface of the Tubercle Bacillus and the Mechanism of Its Reaction with Immune Serum" and "Observations on Certain Hyperplastic and Neoplastic Processes as They Occur in the Skin."——Dr. John M. T. Finney, professor of clinical surgery, Johns Hopkins University School of Medicine, Baltimore, will be guest of honor of the Medical Club of Philadelphia, October 28, at a reception at the Bellevue-Stratford Hotel.—— Sir John F. H. Broadbent, London, will be the guest of the section on medicine of the College of Physicians, October 24.

RHODE ISLAND

Society News. — The Rhode Island Medical Society met, September 1, as the guest of the board of trustees of the Rhode Island Hospital; Dr. Norman M. MacLeod, Newport, president, presided. The meeting was opened by Dr. Roland Hammond, Providence, of the orthopedic staff of the hospital, who demonstrated methods of treatment of the inmates. There was an inspection of the new hospital building at the invitation of the superintendent, Dr. John M. Peters.—— Dr. Thomas J. McLaughlin has been elected president of the Woonsocket District Medical Society.

TEXAS

Texas Increases Capacity for Medical Students.—The freshman class at the University of Texas School of Medicine, Galveston, this fall was increased to 100 students, whereas heretofore it has been limited to sixty-five. Changes making possible the increase included the expansion of the laboratories for bacteriology, physiology and biochemistry, minor alterations in other departments, and the removal of the school of pharmacy to Austin. A college building was erected in 1925, a smaller structure in 1920, one in 1921 and another in 1922. The oldest structure, the administration building, erected in 1890, was repaired a year ago. The John Sealy Hospital, connected with the school, comprises six buildings and plans are being made to expand the institution when the funds of the Sealy-Smith Foundation accrue. The entire estate of Mr. Sealy, estimated at several millions of dollars, ultimately will be turned over to the foundation. John Sealy and his sister carried forward the work of the hospital that was begun by their father, who came to Texas in 1846 and laid the foundation of his fortune as a banker and principal owner of the Galveston Wharf Company.

Annual School for Sanitarians.—The fifth annual Texas Sanitarians Short School will be held at Houston, November 1-4, under the auspices of the Texas Association of Sanitarians, with the state department of health and the city of Houston cooperating. It was found on organizing this school that many are employed in health departments in small cities who hold several positions; for example, the town marshal may have charge of the food inspection service. Such men obtain much practical knowledge at this annual short period of instruction, and probably 300 officials, ranging from the health officer of the large cities to the sanitary inspector of villages, will attend the coming session. Practical demonstrations, lectures, quizzes and inspection trips make up the program. There will be a symposium on milk sanitation, water supply sanitation, methods of waste disposal and mosquito control. A milk inspectors' school will be conducted. The instructors and lecturers include, among others, Dr. James C. Anderson, state health officer, Texas; Dr. Oscar Dowling, state health officer of Louisiana; Asa C. Chandler, Ph.D.; Dr. Leon H. Martin, director of public health of Fort Worth, and Dr. Arthur H. Flickwir, health officer of Houston and director of the school.

Chat with a Broadcaster.—For about three months a representative of the Dallas County Medical Society has been broadcasting on health over Station KRLD, Dallas, on Tuesday evenings, at 8 o'clock. On request, he has related his experiences to the bureau of health and public instruction at these headquarters. The talks seem to be appreciated and about thirty letters a week are being received; some are only an expression of appreciation and others ask questions. The speaker requests answers from members in his society who are most familiar with the phase of medicine involved in the questions, and his colleagues give the heartiest cooperation. One expression he sometimes has to use has made more friends than any other, and that is "I don't know." He never forgets that his mission is to preach scientific medicine, and at the same time to illustrate his subject in an enter-

taining manner, for it appears that no matter how scientific and correct a talk may be, if it is not entertaining it is lost. He requested one listener, a woman confined to bed for years with tuberculosis, to get off the air for a minute and then suggested that his radio audience write to this woman and "shower" her with things appropriate for an invalid mother. She has received presents and expressions of goodwill which have made her happier than she ever hoped to be. Station KRLD is owned by the Dallas *Times Herald*, and is directed by Arthur W. Stowe, Adolphus Hotel. This physician has not allowed his name to be used by the newspaper or by the station announcer. He is the president of the Dallas County Medical Society, George L. Carlisle.

WASHINGTON

Mr. Payne Enlarges Scope of His Sanipractic License.—Mr. R. B. Payne, Monroe, a licensed sanipractor, was recently arrested on a charge of practicing medicine without a license, and was released under $250 bail. The state department of licenses, which was responsible for the arrest, charged that Mr. Payne had been performing operations and writing prescriptions and otherwise exceeding the authority granted by his sanipractic license.

Progress in "Talk Campaign."—About 1,200 people attended a lecture by Dr. Edward A. Rich, Tacoma, at Longview, September 18. His subject was "Elements of Character Analysis in Selecting Life Work." The Kiwanis Club of Centralia has endorsed the league's plan for health programs. Dr. Joseph R. Turner, Jr., Tacoma, addressed the Puyallup Kiwanis Club, September 29, on "The Tired Business Man and His Heart"; Dr. James Tate Mason, Seattle, addressed the Kiwanis Club of Bremerton, September 28, on "Health Inventories for Business Men." Another meeting sponsored by the public health league was that of the chamber of commerce of Burlington, September 28. The principal speaker was Dr. Albert P. Duryee, Everett, and his subject, "The Prevention of Cancer."

County Society Cooperates with Y. M. C. A.—The Snohomish County Medical Society has carried on an educational campaign in cooperation with the Y. M. C. A. which has reached nearly all the industrial mills and plants in the county with the message of scientific medicine. The men in the plants seem to have been well impressed, and they were given opportunity to ask questions; forty-three lectures were given in the nine plants, and the total attendance was 3,190. The lecturers were Drs. J. F. Beatty, John W. Bell, Henry W. Bortner, Samuel L. Caldbick, Albert P. Duryee, Frederick A. Franke, William V. Fulton, Chauncey B. Jones, James S. Purdy, Harry R. Secoy and Leon G. Woodford, and some of the subjects were the control of communicable diseases, how to live long, milk and water supply, common colds, cancer, goiter and venereal disease protection.

WEST VIRGINIA

Society News.—Among the speakers at the meeting of the Central Tri-State Medical Society, Huntington, September 29, were Dr. Arthur R. Elliott, Chicago, "Coronary Arterial Disease and Coronary Thrombosis," and Dr. Walter T. Dannreuther, New York, "Office Treatment of Gynecologic Patients."——A symposium on infantile paralysis was presented by the Barbour-Randolph-Tucker County Medical Society, Elkins, September 21; the speakers were Drs. T. P. Haslam, Solomon G. Moore, Orr L. Perry, Charles H. Hall, and Benjamin I. Golden.——The September program of the Fayette County Medical Society was presented by the staff of the Kanawha Valley Hospital, Charleston. At the August 9 meeting of the society at the McKendree Hospital, McKendree, papers were read by Drs. Rome H. Walker on "Industrial Medicine and Surgery," and Asahel C. Lambert, "Roentgen Rays in the Diagnosis of Pulmonary Tuberculosis."

WISCONSIN

Society News.—The Milwaukee Physicians' Association held its annual meeting, October 12, nominating for president Dr. Arthur R. F. Grob; for vice president, Dr. B. Hoermann, and for secretary, Dr. Gilbert F. C. Mueller. The society was organized more than twenty years ago. There are to be weekly meetings of a business and social nature.

State Medical Election.—At the annual meeting of the State Medical Society of Wisconsin, September 21-23, Eau Claire, Dr. John J. McGovern, Milwaukee, was installed as president; Dr. Karl W. Doege, Marshfield, was made president elect; Mr. J. G. Crownhart, Milwaukee, secretary, reelected, and Dr. Archie J. McDowell, Soldiers Grove, speaker of the house of delegates. The next annual meeting will be in Milwaukee.

Package Library Service for Physicians Extended.—The dean of the university extension division of the University of Wisconsin announces that the package library service to physicians is to be greatly expanded. Miss Frances Van Zandt, who developed the medical library service at the Iowa State Library, has been appointed in charge of the package library at Wisconsin. The medical library extension service now is prepared to send on request (1) medical textbooks and reference books; (2) periodicals; (3) collections of reprints, packet library dealing with special topics; (4) brief abstracts of the literature on special topics, and (5) preparation of bibliographies dealing with special topics. The period of loan is two weeks except for current journals, and there is no charge except postage both ways for the material loaned. Lists for available books and periodicals will be sent on request. This service is only one of five which will be included in the development of the medical extension program, for which the president of the university, Glenn Frank, LL.D., appointed a committee to formulate plans recently. This committee requested the state medical society to appoint an advisory committee to represent the physicians of the state, and that committee comprises Dr. Maurice D. Bird, Marinette; Otho A. Fiedler, Sheboygan; Isaac G. Babcock, Cumberland; Robert L. MacCormack, Whitehall, and James F. Wilkinson, Oconomowoc. At a joint meeting of the committees at Madison, recently, plans were made for developing postgraduate medical work along several lines of service.

GENERAL

Impostor Solicits for Equipment.—A man using the names Berg, Berglind and Willis has been visiting physicians in the Chicago area claiming to be a representative of the Hanovia Chemical and Manufacturing Company, and in several instances has secured a cash deposit from physicians to apply on equipment which he promises to deliver. He is not known by the company which he claims to represent, and physicians should beware of giving orders or advancing cash to him. He is dark skinned and well built, aged about 38, 70 inches tall, weighing about 175, pleasant and straightforward in appearance, and dresses in dark clothes.

Epidemic Encephalitis Decreasing in Most Countries.—During the last three years, no important outbreak of epidemic encephalitis has occurred in Europe or in America, and its seasonal fluctuations are becoming more uncertain. There were 142 cases in England and Wales in the four weeks ending July 25, but the incidence fell again in the following weeks. There was a slight increase in Scotland, Netherlands and Belgium during part of the summer. The Epidemiological Report of the Health Section of the League of Nations states that there were 2,267 cases in England and Wales during 1926 with 1,325 deaths, whereas in 1924 there were 5,036 cases with 1,407 deaths. In England, the disease is more prevalent in urban than in rural districts. Its incidence is highest in the north of England, decreasing through the south, and is lowest in Wales. Influenza is usually more prevalent in northern than in southern England, but the difference is less marked. Contrary to epidemic encephalitis, influenza is said to cause usually a higher mortality in rural than in urban districts.

Dr. Walsh Resigns.—The announcement has been made by Dr. William H. Walsh of his resignation as executive secretary of the American Hospital Association, effective, Jan. 1, 1928. He will return to his private practice of hospital consultation with offices in New York and Chicago. Dr. Walsh has been executive secretary of the American Hospital Association since February, 1925. At that time the hospital association was conducting its business in two rented rooms with a staff of six people, while at present the association has its own building, a staff of fifteen assistants, a reserve fund and has just completed a most successful annual convention. The institutional membership has about doubled during the last three years, the general income has increased one third, and although extraordinary expenditures incident to the purchase of the new building have been made, the treasury of the association, Dr. Walsh states, is more favorable today than when the work was being conducted in rented quarters. The association recently successfully launched the publication of a quarterly bulletin with legitimate advertising in all issues, and has expressed its desire to extend this publication to a monthly hospital journal at an early date.

Meeting of Pediatricians.—The Central States Pediatric Society held its twelfth annual meeting in Cleveland, Octo-

ber 14-15, with the pediatric section of the Academy of Medicine acting as host. The program opened at the Babies and Children's Hospital, where there was a luncheon; it was continued at the Allen Memorial Library where there was a tea following a scientific session, and again at the Hotel Cleveland where the annual dinner was held. The society was the guest of the pediatricians of northern Ohio at the Allen Memorial Library at a luncheon. Saturday afternoon was given over to recreation at the Cedarhurst Country Club. Among other speakers at the Babies and Children's Hospital were Dr. Spencer A. Wahl, on "Organization and Method of Operation of Institutional Care of Children in Cleveland"; Dr. Henry J. Gerstenberger, on "Dose of Antirachitic Factor in the Prevention and Cure of Rickets," and Dr. Elizabeth Bartos, on "Complete Heart Block in Diphtheria with Recovery"; among others at the Cleveland Medical Library were Drs. Harold O. Ruh and Paul G. Albrecht, who reported two cases of cirrhosis of the liver in infancy in one family, and Dr. Oscar B. Markey, on "Psychiatric Approach to Enuresis." A cinema talk was given by Dr. Wingate Todd on "Physical Growth of Children."

Offer of Prize Brings Many Claims for Cancer Cure.—Since the offer of two $50,000 prizes by William Lawrence Saunders of New York, under the auspices of the American Society for the Control of Cancer, for a cure of cancer, more than 1,500 ways to eradicate cancer have been proposed, according to George A. Soper, Ph.D., managing director of the American Society for the Control of Cancer, at the Detroit meeting of the American College of Surgeons. More than 100 writers were ready to come to New York at once to demonstrate their cures, and a few presented themselves without waiting to be summoned. Some of these demanded their pay in advance, while others considered that the offer of $100,000 was inadequate. A telegram was sent to Europe to restrain one person from embarking for New York at once. Little real evidence was given to show the standing of the writers or the methods proposed, some claiming authority because of their advanced age, and others by reason of inheritance. It was curious to see, Dr. Soper said, what confidence was placed in the beneficent gifts which nature offers to her children in the form of herbs; in the healing power of poisons, acids and alkalis; in the beneficent qualities of such uncanny objects as crabs and toads, and in the sting of insects and bites of serpents. Dr. Soper mentions many of the simple cures presented; they varied from egg yolk to roasted walnuts. Very few of the 1,500 communications were from physicians in good standing or from research workers of authority (THE JOURNAL, Dec. 25, 1926, p. 2169).

Bequests and Donations.—The following bequests and donations have recently been announced:

Northwestern University, Chicago; New York University, New York; University of Pittsburgh, Pittsburgh; Lincoln Memorial University, Harrogate, Tenn.; Syracuse University, Syracuse, N. Y.; Lafayette College, Easton, Pa.; Trinity College, Hartford, Conn., and McKendree College, Lebanon, Ill., each a trust fund of $50,000, by the will of the late Elbert H. Gary, to be known as the Elbert H. Gary Scholarship Fund, the net income to be used toward the payment of regular tuition fees of students selected by the boards of trustees of the institutions noted.

New York Post-Graduate Medical School and Hospital, $10,000, by the will of the late Mrs. Joseph Pulitzer.

General Hospital, Elizabeth, N. J., $50,000, by the will of the late Mrs. Evelyn P. Bull.

New Jersey Orthopedic Hospital, $10,000, by the will of the late Samuel W. Baldwin.

Methodist Hospital and the Presbyterian Hospital, both of Philadelphia, $10,000 each, by the will of the late Fannie W. Irwin.

St. Luke's Hospital, Presbyterian Hospital, Children's Memorial Hospital and the Chicago Orphan Asylum, all of Chicago, each $10,000, by the will of the late Robert Forsyth.

Children's Memorial Hospital, Chicago, $5,000, by the will of the late William Dickinson.

Episcopal Hospital, Philadelphia, $15,000, to establish three beds, by the will of Marion E. Stambach, in memory of her parents and husband.

Knickerbocker Hospital, New York, $10,000, by the will of the late Mrs. Mary E. Robinson Markle.

Children's Memorial Hospital, Chicago, $10,000, by the will of the late Wesley Dempster.

St. Joseph's Hospital, Milwaukee, $10,000, to establish a free bed, by the will of the late Dr. Joseph Schneider.

The department of psychology, Princeton University, $50,000, by the will of James T. Walker, St. Louis, who was recently killed in an airplane accident at Pottsville, Pa.

St. Luke's Hospital, New York, $15,000, by the will of the late Margaret Hind.

Flower Hospital and Homeopathic College, New York, $7,500, by the will of the late Emily O. Butler.

Mansfield General Hospital, Mansfield, Ohio, $5,000, by the will of the late Benjamin F. Bissman.

Columbus Children's Hospital, Columbus, Ohio, $100,000, by the will of the late John S. Jones.

Home and Hospital of the City of Findlay, Ohio, $5,000, by the will of the late Mrs. L. C. Donnell.

Kewanee Public Hospital, Kewanee, Ill., $20,000, by the will of Abgail B. Whiting.

Jewish Hospital of Brooklyn, $1,000, by the will of Esther Monday.

Washington County Hospital, Washington, Iowa, $15,000, from Mr. Winfield Smouse of Washington toward the erection of a nurses' home.

The University of Pennsylvania is to receive the residuary estate of the late Frank G. Zimmerman after the death of his widow. The estate is to be held in trust; it amounts to more than $600,000; three fourths of it is to be used for the university hospital.

St. Edmond's Home for Crippled Children, Philadelphia, according to the will of the late Dr. J. M. Spellissy, Philadelphia, is to receive his country house at Laurelton, N. J.

Christ Hospital, Cincinnati, and the Flower Hospital, Toledo, each $10,000, from the estate of the late Harriet L. Stephenson, Bellefontaine.

Floating Hospital of St. John's Guild and the S. R. Smith Infirmary, New York, $4,000, and the Servants for the Relief of Incurable Cancer, $8,000, by the will of the late Mrs. Evelyn L. Sandberg.

White Plains Hospital, White Plains, N. Y., the residue of the estate of the late Mrs. Alice Brent Roosevelt valued at more than $150,000.

Harper Hospital, Detroit, $60,000 for the maintenance of a room; Children's Free Hospital, Louisville, Ky., and the Home for Incurables, Washington, D. C., each $5,000, by the will of Mrs. Louise Todd Hauge of Washington.

Mount Sinai Hospital, New York, $2,500, by the will of Samuel Binswanger.

Epworth Hospital, South Bend, Ind., $6,000, by the will of Mrs. Susie H. Beiger.

Northern Liberties Hospital, Philadelphia, $2,500, to endow a free bed, by the will of the late Hannah Singer Berkowitz, and the bulk of her estate to be held in trust twenty years, when the principal and interest will be used in the erection of a wing to the Jewish Hospital, Philadelphia.

Mount Sinai Hospital, New York, $2,000, and the Ladies' Auxiliary Society of Mount Sinai Hospital, $1,000, by the will of Mathilde Rothschild.

Hillsboro Hospital, $10,000, by the will of William Welge, Hillsboro, Ill.

Charlevoix Hospital, Charlevoix, Mich., $1,000, to be placed in a permanent endowment fund by Mrs. David May, St. Louis.

CANADA

Society News.—Dr. Donald E. H. Cleveland addressed the Vancouver Medical Association, Vancouver, B. C., October 4, on "Recognition of Syphilis," and Dr. Edward Murray Blair on "Conservative Treatment for Chronic Endocervicitis"; at a special meeting of the association, September 7, Drs. Alexander Primrose and Duncan A. L. Graham of Toronto gave addresses on "Inflammation and Tumors of the Breast" and "Constipation," respectively. The annual dinner of the association will be at the Hotel Vancouver, November 10.

Personal.—Dr. William C. Givens won the F. N. G. Starr Championship Cup at the third annual golf tournament of the Toronto Academy of Medicine, September 12. A team representing the academy defeated a team representing the Hamilton Medical Society at the Mississauga Golf Club, August 4.——Dr. Ella P. Hopgood, Dartmouth, N. S., was elected president of the Canadian Medical Woman's Association at the annual meeting in Toronto.——Lawrence Irving has been appointed associate professor in the physiology department of the faculty of medicine, University of Toronto, succeeding Prof. J. M. D. Olmsted, Ph.D., resigned.——Dr. Emerson J. Trow has been appointed assistant professor of medicine in charge of dermatology, succeeding Dr. David King Smith, resigned.——Dr. Malcolm M. Crawford has been appointed an associate in medical jurisprudence.

Montreal Labor Wants Health Department Reorganized.—In consideration of the recent typhoid epidemic, the Montreal Trades and Labor Council adopted a resolution recently calling for a complete reorganization of the city department of health so that it would give efficient service in any future emergency and have a director of public health invested with power to prosecute violators of the health laws without outside interference. The president of the council, Mr. J. T. Foster, stated that the question of the typhoid epidemic had been taken up solely because of its bearing on the health of the working classes and public generally. According to the Toronto *Saturday Night*, he said that certain members of the Montreal Council adopted an "inane, stupid and crassly ignorant attitude" on the question of the epidemic.

Postgraduate Tour Through British Columbia.—The Canadian Medical Association and the British Columbia Medical Association jointly arranged for another tour of instructors through the province of British Columbia in September to bring postgraduate instruction to physicians in their local communities. The instructors and their subjects were Dr. Alexander Primrose, dean and professor of chemical surgery, University of Toronto Faculty of Medicine, inflammation and tumors of the breast; goiter. Dr. Duncan A. L. Graham, professor of medicine, University of Toronto Faculty of Medicine, the anemias and constipation. Dr. William B. Burnett, Vancouver, pelvic pain in women, toxemias of pregnancy, and some common obstetric emergencies. The towns visited were Fernie, Trail, Vernon, Vaucouver, New Westminster, Victoria, Nanaimo, Prince Rupert and Prince George.

Government Services

Medical Service of Veterans' Bureau Reorganized

A recent order issued by the director of the U. S. Veterans' Bureau, Frank T. Hines, realines the duties of the various divisions of the medical service of the bureau and expands the medical service. Authority delegated to the medical director is amplified and extended over the subsections of the organization. Dr. Benjamin W. Black is the medical director. The medical service is now divided into the following units:

Divisions: regional office, general medical, tuberculosis and neuropsychiatric.
Subdivisions: insular and foreign, dental, prosthetics, medical research, occupational and physiotherapy and business management.
Sections: nursing, dietetics, social work and library.

The subdivisions and sections, according to the order, are independent of any of the four divisions, and with the exception of the medical research division, which is directly responsible to the medical director, are responsible to the medical director through the executive officer of the medical service. The latest figures compiled by the U. S. Veterans' Bureau show that there are at present 25,267 veterans of the World War hospitalized at veterans' bureau and other hospitals belonging to the government.

Changes in Medical Personnel

The September *U. S. Veterans' Bureau Medical Bulletin* notes, among others, the following changes in personnel: Dr. Claude L. Armstrong, transferred from Portland, Ore., to American Lake, Wash.; Dr. Aaron H. Braverman, resigned at West Roxbury, Mass.; Dr. Mordecai R. Bren, transferred from Algiers, La., to Livermore, Calif.; Dr. Junious E. Crouch, resigned at Portland, Ore.; Dr. Harold Freed, transferred from regional office, San Antonio, Texas, to Dwight, Ill.; Dr. George R. Gates, transferred from Bronx, N. Y., to West Roxbury, Mass.; Dr. William C. Gibson, transferred from Algiers, La., to Portland, Ore., as medical officer in charge. Dr. Chauncey H. Graves, transferred from suboffice, Syracuse, N. Y., to Bronx, N. Y.; Dr. Julius A. Kaplan, transferred from Northampton, Mass., to West Roxbury, Mass.; Dr. L. T. Kewer, resigned central office, adjudication service; Dr. Nicholas A. Mandelos, resigned medical service field roll —formerly at Fort Bayard; Dr. Vernon L. Mahoney, transferred from Charlotte, N. C., to Fort Snelling, Minnesota; Dr. Glenn R. Mullins, transferred from Washington, D. C., to Muskogee, Okla.; Dr. William J. Olds, resigned at Chillicothe, Ohio; Dr. Harry R. Reynolds, transferred from Northampton, Mass., to Philadelphia; Dr. Fred C. Smith, transferred from Palo Alto, Calif., to Tacoma, Wash.; Dr. Walter B. Swackhamer, transferred from Portland, Ore., to Palo Alto, Calif.; Dr. James W. Thornton, resigned at Fort Lyon, Colorado; Dr. Isaac R. Wagner, transferred from West Haven, Conn., to Edward Hines, Jr., Hospital, Maywood, Ill.; Dr. Horace J. Whitacre, consultant, resigned at Tacoma, Wash. The following changes have recently occurred in regional offices: Dr. Edward K. Disney, resigned at Louisville, Ky.; Dr. James A. Gettings, Jr., resigned at New Haven, Conn.; Dr. John E. Hewitt, resigned at Indianapolis; Dr. Peter Ver Meulen, transferred from Milwaukee to Sioux Falls, S. D.; Dr. Galen R. Wright, resigned at Newark, N. J.

Changes in Assistant Surgeon Generals

Dr. Samuel B. Grubbs, until recently an assistant surgeon general in the central office of the U. S. Public Health Service, Washington, D. C., has been assigned to duty in the field as director of district number three, with headquarters at Chicago, and will be succeeded by Dr. Francis A. Carmelia, who assumes the rank of assistant surgeon general in charge of the division of foreign and insular quarantine and immigration. Dr. Ralph C. Williams has been appointed an assistant surgeon general in charge of the division of sanitary reports and statistics, succeeding Asst. Surg. Gen. Claude C. Pierce, who has been designated chief of the division of personnel and accounts with the rank of assistant surgeon general.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Oct. 1, 1927.

Migration to Canada: Free Medical Examination

An important step has been taken by the British and Canadian governments to facilitate migration to the dominion. The practice has been for intending settlers to undergo medical examination by private physicians. These have not always been familiar with the requirements of the dominion authorities, and the method has been found inconvenient. A further objection is that the examination involves payment of a fee, which has been found to act as a deterrent on migration. In many cases desirable settlers have been unable to provide the amount required, or have been unwilling to spend money which would prove to be wasted in the event of the medical examination being unfavorable. The government of the dominion of Canada, in conjunction with the imperial government, will establish in Great Britain a Canadian medical service, under which the medical examination of prospective settlers in that dominion will be carefully systematized and will be conducted free of charge. Officers responsible to the Canadian government will be appointed in this country. These will conduct the medical examination of intending settlers without cost to the migrants, and will afford a guarantee that those who are passed comply with Canadian requirements. Great importance is attached by the British government to any arrangement for removing obstacles in the way of emigrations to the dominions from this country, and it has long been desired to relieve them of the expense of the medical examination required by the dominion authorities. Therefore the step about to be taken by the Canadian government is welcomed. In order to facilitate it as far as possible, local authorities will be invited to assist by placing suitable premises at the disposal of the Canadian authorities for the medical examinations. To diminish as far as possible inconvenience and cost to intending migrants, the examinations will be conducted at a number of centers at fixed intervals and prearranged times.

The Color Line in South Africa

The trouble in the Victoria Hospital, Mafeking, South Africa, owing to the nurses (all white) objecting to take orders from a negro physician, when dealing with white patients sent in by him for operation, has been described in a previous letter (THE JOURNAL, July 30, p. 383). According to the *British Medical Journal*, a further stage has been reached by Dr. Molema, the native physician concerned, having agreed to accept payment of the costs to date in connection with an application he had made in the supreme court against the nurses. The nurses, through their attorneys, gave Dr. Molema the assurance that they would afford his patients the same treatment and attention as patients of other physicians; they would make no differentiation whatever, nor would they alter their attitude as long as they remained attached to the hospital, subject to the provision of the law governing the treatment of patients. A fund was raised in Mafeking to assist the nurses to pay the cost of the proceedings. The whole of the nursing staff have tendered their resignations and, as it has been found impossible to replace them, the hospital will have to close down. This will be averted only if legislation is enacted in the cape provincial council giving hospital committees the right to exclude physicians at their discretion. The cape administrator is attempting to do this by introducing an amendment to the hospitals and charitable institutions draft

ordinance. But this proposed amendment is encountering strong opposition as being designed to exclude a particular individual. In the Transvaal province, where the problem of native physicians attending European patients in hospitals has not yet arisen, legislation has actually been enacted to deal with the possibility. The Transvaal provincial gazette contains in a schedule certain regulations approved by the administrator in the executive committee. This schedule states that "no patient shall be admitted to hospital unless such patient is attended by a physician approved by the committee, and no physician shall attend any patient in hospital unless he has been duly authorized thereto by the committee, provided that any physician to whom a committee refuses authority shall have the right to appeal to the administrator, whose decision shall be final."

The Future London: City Planning

The North Middlesex Joint Town Planning Committee, whose area lies to the north of London, into which the great metropolis is spreading, has approved an interesting report on zoning by an expert. The outer belt of the area is mainly rural in character, but penetration by arterial roads and electric railways has brought it within "the shadow of urbanization." A new situation has arisen, because the rate of increase in the population has been declining, and statisticians think that in a relatively short time the population is likely to remain stationary. Further, the tendency toward decentralization, both of industries and of population, which is a voluntary movement, is becoming more marked. Instead of expanding as one gigantic unit, the expert holds that London should take the form of a ring of satellite towns, not necessarily new ones, dependent on the parent city for the major cultural and commercial organization that is possible only in a metropolis, but otherwise self-supporting and separated from London and one another by a belt of open country. The inner belt of the area is already built up, and the districts are little more than local government units; the intermediate belt needs to have its amenities preserved and identity maintained by a park strip along the streams that, in many cases, separate adjacent districts, or by a like recognizable physical boundary; the outer belt, being semirural in character at present and for the most part unspoilt, offers the best scope of all for zoning. It is desirable to maintain the semirural aspect by preserving large areas for their present use as market gardens. A definite ring of open spaces is recommended between the outer semirural belt and the intermediate suburban belt, so that a more or less continuous green girdle may result. In regard to buildings, it is recommended that four houses to the acre should apply in the semirural zone, subject to special approved schemes for agricultural or industrial workers; in the suburban zone a density not exceeding twelve houses to the acre, and elsewhere eight, six and four houses to the acre.

Too Many Physicians

There are now 52,614 physicians registered in Great Britain —more than one physician to every thousand of population. In America, to which we come next, there is one physician to every 753 people. In 1926, 2,120 names were added to the medical register, a net increase of 876. In 1918 physicians on the register numbered 43,926. The increase is attributed to the excessive entries of students immediately after the war. But the insurance act, which opened a new source of income, is probably more important. Is there work for all these physicians? Dr. Cox, medical secretary of the British Medical Association, said in a press interview that in the medical profession, as in every other, there is a tendency for supply to exceed demand. He thought that young physicians, both men and women, are having more difficulty in getting posts. The new work being undertaken nowadays has created a demand for more physicians. There are a good many more medical posts available in connection with such things as maternity and child welfare, tuberculosis work, school inspection and the treatment of school children. A comparison of the number of physicians per head of the population for the countries of Europe seems to indicate that the importance of the care of health is more appreciated in England than elsewhere. Switzerland approaches our figure with one physician to every 1,137 people. Denmark and Germany are next with 1,200 and 1,321, respectively. Russia has as many as 3,789 people served by each physician, while Bulgaria is at the bottom of the list with 4,230.

Increase in Deaths from Anesthetics

In 1911 the number of deaths in England and Wales from anesthetics was 276; in 1926 the number had risen to 556. To obtain data on which to account for the increase, the ministry of health circularized the hospitals asking them to supply details of the cases. In reporting on the increase, the ministry expresses the view that it may be due to some extent to the great number of operations now performed but complains of the insufficient number of cases submitted, which numbered only twenty-nine.

Blair Bell's Lead Treatment of Cancer

The value of Prof. Blair Bell's lead treatment of cancer still remains *sub judice*. He recently stated that out of 270 cases treated, fifty-four were influenced, while in 116 there appeared to be no effect. In some cases, the disease appeared to have been arrested. In one case, the growth was beneficially affected, although the treatment appears to have proved fatal. A woman was admitted to the Birmingham General Hospital because of inoperable cancer. Eight injections of the lead preparation had the effect of reducing the cancer from the size of a man's fist to that of a hazel nut, and the woman returned to almost normal health. After the ninth injection, however, she developed toxic symptoms, and died a few days later. A necropsy revealed the presence of a small quantity of lead. Less than 0.1 Gm. was found, and probably 10 per cent of that represented the overdose. At the inquest, Dr. Francis Lamb, pathologist to the Cancer Research Committee, agreed that the woman would not have died had she not had the last injection. The coroner, in returning a verdict of "Death from fatty degeneration of the liver, probably due to lead poison," said that the treatment had been properly administered.

Lunacy in 1926

The annual report of the board of control (the body appointed by the government to control lunacy administration) states that the increase in the notified insane during 1926 was higher than in the previous five years' annual average. The number on Jan. 1, 1927, in England and Wales was 136,626, an increase of 2,743 over the preceding year. The five years' annual average increase was 2,582. The relative distribution of the sexes—males, 43.9, females, 56.1—was the same as in the three preceding years, but the proportion immediately before the war was males, 46.2; females, 53.8. Admissions to mental hospitals numbered 25,196. The figures on the other side were: recovered, 6,983, and died, 8,411. The total expended on the upkeep of public mental hospitals for the year ending March 31, 1926, was $37,900,000. The mentally defective patients on Jan. 1, 1927, numbered 38,882 (males, 19,144; females, 19,738). During the year, there was an increase of 2,067 under care. It is stated again that the lack of accommodation for defectives becomes more urgent each year. The board emphasizes the need for the installation in mental hospitals of a roentgen-ray apparatus. Sev-

eral instances are given of possible opportunities for saving life had the rays been available. In one case, which had been diagnosed at different times as pellagra and dysentery, seventeen hairpins and a safety-pin were found to have been swallowed.

PARIS

(From Our Regular Correspondent)

Sept. 29, 1927.

Combined Serotherapy in Cholera Infantum

Dr. Lesage, physician to the Hôpital Pédiatrique Hérold, has been specializing for some time in the study of the micro-organisms that cause diarrheas in infants and young children. He has just made known a mode of treatment in summer diarrheas and cholera infantum which he has been experimenting with for the past thirty years. This disorder is due to a combination of three micro-organisms: *B. oedematiens, B. perfringens* and *Vibrio septicus,* all found in the soil. Dr. Lesage injects subcutaneously, at three different sites and at one sitting, 10 cc. of three serums prepared, respectively, from cultures of the three micro-organisms, and properly sterilized. He repeats the injections the day following and also the day thereafter, according to need. The results are more favorable the earlier the treatment is begun. The practical result of the inoculation of the three serums is that the loss of weight is checked, the fever drops, and the skin usually becomes warm again. The digestion improves.

The Medical Profession and the Law Pertaining to Narcotics

Severe laws have been passed for the suppression of toxicomania, which, especially since the war, has increased at a frightful rate. Not only is the presentation of a medical prescription demanded, but, when opium and its derivatives are involved, and likewise pharmaceutic preparations that contain the slightest amount of opium, or heroine or cocaine, the prescription is retained by the pharmacist, copied into a special register, and the original is kept on file. The client receives only a copy, which he cannot use in another pharmacy. Furthermore, the physician may prescribe of ampules of morphine only a week's supply. If it is a matter of demorphinization, a new prescription should be made each week. Special inspectors visit monthly all the pharmacies and examine the special register in which all prescriptions for narcotics are copied, the purpose being to discover what physicians are prescribing such substances with especial frequency. By this means, it has sometimes proved possible to discover the identity of unscrupulous physicians. But of late these inspectors have come to overstep their powers. They are recruited, not among the physicians, but among pharmacists not practicing their profession—usually professors in the schools of pharmacy—which permits them to eke out their slender income. The medical syndicates, however, are complaining of these inspectors. Whenever a dose of morphine seems too high or they note that a physician gives a certain style of prescription very frequently, they send in a report to the authorities, and many honorable physicians have been summoned before the judge, who unfortunately is often less competent than the pharmacist, and they often have great trouble in exculpating themselves for giving single prescriptions of 2, 3 or 5 Gm. of morphine to an addict undergoing detoxication treatment or to a patient in the last stages of cancer.

Dr. Paul Sollier, a psychiatrist well versed in questions pertaining to detoxication, has recently demanded the revision of the existing law, which discourages conscientious physicians but which the unscrupulous can easily circumvent. A physician was prosecuted even for having written a prescription for a supply of morphine for his medicine case.

The medical syndicate of Paris passed a unanimous resolution requesting that, before a physician was summoned before a court, he should be interrogated by a health officer (a physician) who could understand his defense and who would furnish a report to be transmitted to the court, along with the report of the pharmacal expert.

The Biologic Control of Medicaments

The question of the biologic control of drugs or medicaments is being very much discussed. The extreme variability in the potency of therapeutic agents offered on the market under identically the same name has, for many years, given rise to complaints on the part of physicians. Various brands or lots of cocaine, although a product accurately defined chemically, are by no means identical. Caffeine, since 1921, has been poor, from 40 to 50 per cent of the brands on the market being of inferior quality and their toxicity having increased. The theobromines are of more uncertain quality than the caffeines. Their toxicity may be so great that their biologic action is just the reverse of what it should be. Physostigmine produces at times paralysis of the lower limbs, which takes an ascending course and causes death through asphyxia. Such accidents are observed in series, during a given period; then one may go for years without seeing a similar case. Morphine salts present a toxicity varying from one to three. For the past four years, strophanthus preparations have been from four to five times more toxic than in the past. Digitalis never conforms to the requirements of the pharmacopeia. Physicians know that certain products are not up to standard, especially those sold at a low price, and they recommend to their patients to procure their supplies at a certain reliable pharmacy, or they prescribe proprietaries. Substandard products are not always detectable by means of chemical analysis. Biology is invading the realm of pharmacy more and more. Our pharmacopeia should be rapidly revised and biologic control should be introduced. An international agreement, under the sponsorship of the League of Nations at Geneva, should be entered into and an international pharmacopeia, establishing for certain substances biologic standards until such time as the scientists may discover physicochemical constants, should be prepared. An international commission, without mandatory power, was appointed at the Congress of Edinburgh for the biologic standardization of therapeutic products. It organizes every year, at Geneva, an international conference on the subject.

The Results of Films with an Educational Purpose

Educational films, while prepared with the best intentions, have not always met with complete success. Too frequently they have been viewed with indifference by the audience. It would appear, therefore, that an entirely new technic must be developed if results worth while are to be secured. A recent incident demonstrates clearly that if perseverance is shown excellent results are quite possible. Dr. Devraigne, obstetrician in the Lariboisière Hospital, prepared, under the title "The Future Mother," a film depicting with great skill and intelligence, without neglecting the picturesque and amusing details calculated to please the masses, all the preliminary and successive phases of motherhood, with a few excursions into the realm of child rearing and child training. The film had been presented on several occasions, between the acts of various longer representations, to mixed audiences but with indifferent success. An industrialist who saw the film conceived the idea of showing it to the two thousand women employed in his factories. The effect was prodigious, doubtless owing to the creation of a peculiar environment, the presence of a homogeneous audience composed solely of women who knew one another, living in the same community and engaged in the same kind of work, a milieu eminently favorable to the establishing of mental contacts in the silence

of the darkened hall. The manager asked them to write out, over the week-end, their personal impressions of the film and to turn in their papers to him, offering, by way of encouragement, a prize for the best paper. The papers were read by the plant physician, and they all showed that the lessons had been fully understood. This account reveals that educational films, if they are skilfully prepared and presented to a homogeneous audience, are capable of producing excellent results.

A New Form of Library Catalogue

The Bibliothèque Nationale in Paris, in which are deposited, according to law, two copies of every work printed in France, is almost inundated by the increasing flow of publications, which of late have reached 20,000 a month. To house this immense collection of books, it has been necessary to erect new buildings and to establish annexes outside Paris. But a greater difficulty even than the problem of storage space has been the question of publishing a complete catalogue. During the four years of the war, no catalogue was published and a new issue is long since due. The cost of printing such a catalogue would be so great that the annual budget, which is not very large, would be unable to include it. The new director of the library, a young man with modern ideas, has recently solved the difficulty in an ingenious manner by taking advantage of the cinematograph. He placed on large sheets the typewritten titles of all the works, classified according to subjects, and then unrolled the sheets before the cinematograph, which made a record of them. By taking proofs of the films he was able to secure a complete catalogue.

A Movement to Restrict Roentgenography to Physicians

Dr. Béclère, who was one of the early promoters of roentgenology in France and who is an authority on roentgenologic subjects, is heading a movement to confine to doctors of medicine the practice of radiology. When radiology was introduced, laboratory assistants of intelligence gradually acquired wide experience in the manipulation of apparatus. When the chief physician was busy, he often had his assistants make the radiographic tests in accordance with issued instructions. Some of the more skilful were promoted to the rank of director of the laboratory. Thus, a group of technical assistants developed, a number of whom opened radiographic laboratories of their own and acquired a clientele, since the law pertaining to the practice of medicine only enjoins them against prescription of remedies. The profession of radiologist is, therefore, not restricted to a greater extent than that of masseur, *doucheur* (bath operator), or bandage-maker. But this state of affairs has been found to be fraught with danger. A roentgenogram correctly taken does not supply true evidence unless it is correctly interpreted by a specialist in pathology; that is, by a physician. In fact, every radiographic test to be considered valid should be signed by a physician and should be accompanied by an explanatory comment prepared by him.

A Public Service for the Examination of Mushrooms

The fall is the most favorable season for the gathering of mushrooms, and, consequently, the season when mushroom poisoning is most frequent. There have been for some time, in Paris and other large cities, inspection services for the examination of mushrooms offered for sale at the public markets, and they have furnished complete security. The poisonings that occur are not, however, produced by mushrooms bought at the market-place. They are caused by mushrooms collected by peasants or by visitors from the urban centers. From now on during the season, by order of the prefect of police of Paris, persons who have collected mushrooms may bring them to the market inspectors every morning at 9 o'clock and will receive free information in regard to their edibility.

BERLIN

(From Our Regular Correspondent)

Sept. 24, 1927.

Necrology

Two more eminent medical research workers of Germany, Professors Gruber and Penzoldt, have died. Gruber's work in the field of hygiene had become recognized beyond the boundaries of Germany. In 1902, he was called from Vienna, as the successor of Pettenkofer, to the directorship of the Hygienic Institute in Munich. His chief researches are in the domain of bacteriology. His name is inseparably connected with the phenomenon of agglutination.

The name of Penzoldt is also known, chiefly owing to his Handbuch der gesamten Therapie, a work of several volumes, which he published in collaboration with Stintzing, and which is now reappearing in a fourth edition. His publications lie partly in the field of pharmacology, one of which is a textbook. His clinical researches were devoted particularly to pathology of the stomach, but also to pulmonary tuberculosis. In 1889 he contracted pulmonary tuberculosis himself. His advanced age (78) is evidence that he had completely overcome the disease.

The New University Woman's Hospital in Berlin

The beautiful University Woman's Hospital in Artillerie Street, which was erected almost half a century ago, under the general guidance of the gynecologist Karl Schröder, is to be razed, as it no longer meets modern demands, and a new hospital of 210 beds is to be built on the same site. The new hospital will be built under the management of the new director, Professor Stoeckel. In place of the previous pavilion hospital, the new institution will represent a square type of architecture and will be five stories high. The estimated cost, including furniture, furnishings and equipment, is about $1,190,000. There will be four distinct departments: a gynecologic, an obstetric, a septic and a "conservative" department. Each department will have its own operating room, its own staircase, and its own kitchen, dining room and household equipment in general. Each department can thus be isolated from the others. There will be a large roentgenographic laboratory with complete equipment. In the uppermost story there will be a large open solarium for convalescents.

A New Anthropologic Institute

The well known Kaiser-Wilhelm-Gesellschaft zur Förderung der Wissenschaften (society for the advancement of science) opened, on September 15, a new anthropologic institute in Dahlem, near Berlin. The director of the new institute is Prof. Eugen Fischer, formerly director of the anatomic institute in Freiburg. In his introductory address, he emphasized the necessity of clarifying the race idea by means of scientific research, as it has never been given a precise definition and has often been misused for political purposes in Germany and in other countries. The institute comprises three departments: an anthropologic department, in which the origin of man, the classification of races, and social anthropology, are to be studied under the guidance of the director; a department of hereditary transmission in man, in which the hereditary transmission of healthy and of pathologic qualities will be studied under the direction of Privatdozent Verschuer, and a department of eugenics, which will study more particularly the benefits to be derived for medicine and social hygiene from the advances of anthropologic research. The last mentioned department will be under the direction of Dr. Muckermann, formerly a Jesuit father, who is well known for his valuable researches on ants. Among the addresses delivered at the dedicatory ceremonies may be mentioned especially that of Professor Davenport who was sojourning in the city, being in attendance at the International Congress of Hereditary Science.

JAPAN

(From Our Regular Correspondent)

Sept. 15, 1927.

Women to Receive Doctorates

Two graduates of the Tokyo Women's Medical College are now working on their theses for doctorates in medical science at the Tokyo Imperial University. When they complete their work they will be the first two women with doctorates in medicine in this country. Very few Japanese women are admitted to government universities, and when they are admitted they are generally exceptional persons.

Quarantine Applied to Aviators

The quarantine regulations contained in the aviation laws, which took effect, June 1, were applied, September 1, for the first time, when a Russian airplane arrived at Tokyo. The regulations consist of twenty-four articles, and provide that all flying machines arriving from abroad, including those from Korea and Formosa, be inspected by the quarantine officers at certain depots in order to exclude plague, cholera, smallpox and other infectious diseases. The passengers and aviators must receive a health certificate before being allowed to leave the depots.

One Million Increase in Population

Last year's vital statistics, recently published by the census bureau, show a record-breaking increase. The difference between births and deaths during the year was 943,671. But since this number does not include cases yet to be reported, the actual increase in 1926 will total more than a million. The previous high record, which was reached in 1925, was only 875,385. The increase per thousand was 15.59, as against 14.65 in 1925. The increase in 1901-1902 was about 500,000, while in 1912 it was more than 700,000. There were 502,847 marriages, which represented 8.31 per thousand of population and a decrease of 18,590, or 0.42 per thousand as compared with 1925. The average in Japan is lower than in Belgium, Hungary and France, where it is 8.8 per thousand. The number of divorces was 50,119, or 0.83 per thousand of population, which was a decrease of 1,568, or 0.04 per thousand. Out of a total of 2,104,405 births last year, 1,081,793 were boys and 1,022,611 were girls, the sex of the remainder being unrecorded. This was an increase of 18,314 as against 1925. The rate per thousand of population was 34.77, a decrease of 0.15 as compared with 1925. The birth rate per thousand of population invariably has been higher than 30, with the exception of 1906, in the last twenty years. The climax was reached in 1911, the rate being 33.98. Since then there has been a general decrease in the rate, except in 1920. The birth rate in this country is much higher than in Europe. There were 124,038 stillbirths. This was a total decrease of 365 as compared with 1925. The current rate is higher than that in Europe. Out of a total of 1,160,734 deaths, there were 597,292 men and 563,435 women; the sex of the remaining seven persons being unknown. This was a decrease by 49,972 as against 1925. The rate per thousand of population was 19.18 or lower than in 1925 by 1.09. Previous statistics showed that the rate was invariably over 20, so that the rate of 19.18 last year was the lowest recorded.

Milk and Meat Scandal in Tokyo

In connection with the milk and meat scandal, 163 dairy owners, twenty licensed veterinary surgeons, four druggists and three unlicensed veterinary surgeons were summoned and examined by the metropolitan police bureau. Investigation and examinations revealed that Dr. Ichkawa, attached to the Tokyo milk dealers' association, and others, had administered tuberculin injection to cows with tuberculosis, at three yen each, for the last three years or so at 325 different dairies in Tokyo prefecture. It was also revealed that many druggists had sold tuberculin without going through the legally required procedure. The present scandal was disclosed some time ago, when officials of the police bureau found out that a certain woman was selling beef secretly. Examinations disclosed that she obtained that meat from the epidemic research institute, and that the cow from which the beef was obtained had died from tuberculosis. Several men connected with the institute were at once summoned for examination. This led to the discovery by the police that some of the milk sold by Aikosha, a well known dairy, was impure, being taken from cows infected with tuberculosis. It is said that the citizens of Tokyo have been fed, on the average, with the meat of two diseased cows or oxen and 6 koku (1 koku equals 39 gallons) of milk from diseased cows every day for the last ten years or so. This disclosure of the milk scandal reduced the number of milk customers by 90,000, which is about 30 per cent of the total of milk-consuming households. The department of agriculture and forestry is compelled to compensate the dairy owners if diseased cows are slaughtered. Even though it is expensive, the diseased cows must be killed. A movement is on foot for the creation of a huge model dairy farm, which is to be operated by an incorporated concern, to be organized by all the leading dairy owners in Tokyo.

Japan Midwives' Association

The newly formed union of the local midwives' associations, and the newly created central association, held its organizing meeting this summer. Dr. Karube, president of the Tokyo midwives' society, was elected chairman of the board of directors.

PRAGUE

(From Our Regular Correspondent)

Oct. 1, 1927.

Social Insurance

The committee organized in Czechoslovakia to define the relationship between the social insurance and public health services, both voluntary and official, has published a report. The report has no official sanction but it represents the result of conferences between influential representatives of the insurance system and the public health service. Considerable attention was devoted to the definition of terms such as curative treatment, preventive treatment and prevention. While the first term is self explanatory, the second term in the nomenclature of social insurance should be used to signify the intensive medical treatment to be given to those who are in danger of becoming permanent invalids. The last term signifies preventive measures in the original sense of the word. The rôle of the sickness insurance system is to take care of the curative treatment of the insured. This includes the services of a practitioner, possibly a specialist, the provision of medicines and other medical material and, last but not least, any necessary treatment in medical institutions. It was agreed that the social insurance system shall use hospitals and sanatoriums already in existence and that it shall erect similar institutions of its own only in places where there are none. The representatives of the social insurance system have declared themselves ready to cooperate in a large scale program for the building up of a system of public hospitals with specialized departments. The same holds true also for the organization of institutions for the preventive treatment of insured patients. In this field also, present institutions shall be supplemented by new establishments only in places where a similar institution is lacking. As to prevention in the strict sense, it was emphasized that the persons who come under the insurance system should not be excluded from the benefits of institutions organized under the public health service. Funds of the social insurance system shall

not be used for the benefit of the general population, because this would mean that money paid in by the insured was being used for those who have contributed nothing. The only case wherein the general public health service can benefit from the insurance funds will be when the insurance system shall institute a preventive measure for the insured which will indirectly benefit the whole community. The report then describes the rôle that the insurance system, public health service and private organizations should play in public health education. In each of the chapters the present status of the question, the plan for future development and the nearest objects to be attained are indicated. The committee, which was organized to elaborate a report for an international committee of the League of Nations, has simultaneously constructed a public health program for the most important components of the public health work of the country. At the last session, the committee adopted a resolution asking that it be transformed into a permanent body endowed with certain authority so that permanent cooperation between all departments should be assured.

International Antitobacco League

The fifth international congress against tobacco, organized by the International Antitobacco League, was held in Prague, July 2 to 5. The league was founded as early as 1914 for the study of the influences of addiction to tobacco and for the furtherance of the movement against it. The work of the congress was divided into four sections. The first section dealt with the sociological aspects of the tobacco habit. The second section was concerned with the medical aspects of smoking. The third section was concerned with the economic aspects of the problem. The last section was devoted to questions of organization of the antitobacco movement.

Infantile Paralysis

Infantile paralysis, which used to be a very rare malady in central Europe, is becoming more dangerous. In the course of the last two months, reports have announced the spread of the disease in the countries adjacent to the Czechoslovak Republic, particularly Poland and Romania. In the last few weeks, cases of the disease have been diagnosed definitely in Czechoslovakia, particularly in its eastern provinces.

Tuberculosis in the Army

The campaign against tuberculosis in the Czechoslovakian army has been put on a solid basis by a recent decree of the ministry of national defense. Through this decree diagnostic stations for tuberculosis among soldiers have been established in each province. All soldiers who have been diagnosed as suffering from open tuberculosis must be discharged from the army. Before they can be released to return to their homes, they must be kept in isolation for a period. For patients with closed forms of tuberculosis, in whom cure can be expected, a sanatorium and a home for convalescents have been established. In exceptional cases patients may be placed, at the expense of the army, in civilian sanatoriums. Free treatment in the diagnostic stations is offered also to the wives and children of the officers of the army. Before those who have been diagnosed as tuberculous can be discharged from the army, an investigation must be carried out to assure the continuation of treatment and to prevent the spread of tuberculosis in their surroundings. This decree regulates also the educational measures to be carried out in the army.

Public Health

Figures which have been published lately indicate that general public health conditions did not improve in the course of the last year in the Czechoslovak Republic. The birth rate for the country continued its decline. It fell to 25.1, as compared with the maximum of the after-war years, which was attained in 1921 with the rate of 29.7. The decline is actually in the west provinces of the state, for the eastern provinces maintain the birth rate at a fairly high and constant level. The number of stillbirths for 1926 as compared with those of 1925 increased by 2.3 per cent of the absolute number.

The lowest death rate of the after-war period was reached in 1923, when it fell to 15.0. Last year the general death rate for the country as a whole was 15.55. The greatest increase as compared with the previous year is registered in the eastern provinces. The increase of the death rate has been caused chiefly by the increasing mortality in the lowest age groups. The infant mortality rose to 154.3, from 146.3 for the previous year. The most significant increase is to be noted again in the eastern provinces of the state. The middle age groups show practically the same death rate as in previous years, an increase occurring again in the old age groups. Whooping cough appears first as the cause responsible for the mortality figures. The number of deaths due to whooping cough in 1925 was 683; in the following year, 2,886. The increase of mortality from measles is also partly responsible for the rise in the general death rate among children. The rise in the mortality in higher age groups is to be charged to influenza and to the inflammatory conditions of the respiratory organs. The natural increase of the population of the republic has again fallen off, owing chiefly to the increasing death rate. From the highest figure of the after-war period in 1923, amounting to 12.25, it fell to 8.98.

Medical Forensic Councils

The services of experts in forensic medicine have been regulated recently through a special law. In each judicial district, two experts must be appointed who must be consulted separately in each case. If they do not agree, the case must be brought before the medical forensic council. Such councils must be appointed for the whole territory of the Czechoslovak Republic. The councils shall consist of from eight to twelve members and are to be appointed by the minister of justice. The members should include well known experts in forensic medicine, such as university teachers of forensic medicine, chemists, psychiatrists, surgeons and gynecologists. In cases of poisoning, the material to be examined should be sent to the institutes of forensic medicine at the medical faculties. The institute has the right to use the services of other experts in order to benefit by the best possible knowledge for the formulation of the final judgment. In cases of bodily injuries, certificates of general practitioners can be accepted as satisfactory evidence. In cases of insanity, observation in one of the public institutions for the treatment of the insane is required. In doubtful criminal cases, where medical men are actively involved, the medical forensic council must be called together. The main change which this law introduces is the installation of the medical forensic council, the duty of which has been discharged up to the present time by the faculties of medicine.

Marriages

WILLIAM DRAPER NORTH, Noonan, Ga., to Miss Gertrude Clendening Kemper of Nashville, Tenn., June 8.

THOMAS RICKETT POOLEY, JR., Newton, N. J., to Miss Lillian Bernice Hutt of Paterson, October 11.

VINCENT THOMAS JAMES LENTH, Evanston, Ill., to Miss Frances Leonard of Jacksonville, August 29.

DEMETRIUS N. MATSIS, Nashua, N. H., to Miss Mary Cramond of Boston, October 11.

THOMAS S. CROSBY to Miss Martha Vogtlin, both of Ironwood, Mich., August 19.

Deaths

Francis Weld Peabody ✠ professor of medicine in Harvard University, died at his home in Cambridge, Mass., October 13, aged 45, of cancer. Dr. Peabody had been from the time of his graduation from Harvard University Medical School in 1907 a conspicuous figure in the field of medicine. He was a member of the board of trustees of the China Medical Board of the Rockefeller Foundation. He had been a member of the staff of the Harvard Medical School and physician in the Peter Bent Brigham Hospital since 1915. He was a member of the Association of American Physicians and of the American Society for Clinical Investigation. During the World War he served on the Red Cross Commission to Roumania. He had also acted for some time as a director of the Thorndike Memorial Laboratory of the Boston City Hospital. In 1922 he was elected a member of the Council on Pharmacy and Chemistry of the American Medical Association and assigned to the Committee on Therapeutics. To this body he rendered a sincere and important service, his keen discrimination, judicial attitude and devotion to work enabling him to contribute notably to its deliberations. Dr. Peabody was a man of kindly character who had endeared himself to all his associates. His mind was of the philosophical type and he had already made profound contributions to the trend of medical progress. In his death American medicine sustains a serious loss.

FRANCIS WELD PEABODY, M.D., 1881-1927

Eugene Smith, Detroit; University of Buffalo School of Medicine, 1866; secretary of the Section on Ophthalmology, Otology and Laryngology, 1880-1881, 1884-1885, of the American Medical Association, and member of the House of Delegates in 1905; member of the Michigan State Medical Society; emeritus professor of ophthalmology and otology, Detroit College of Medicine and Surgery; formerly on the staffs of the Providence, St. Mary's and Harper hospitals and the Woman's Hospital and Infants' Home; aged 82; died, September 12, of acute bronchitis.

John Walter Wood, Staten Island, N. Y.; Medical Department of Columbia College, New York, 1881; member of the Medical Society of the State of New York; for twenty-five years on the staff of the Staten Island Hospital; formerly county coroner; aged 71; died, September 29.

William Hobart Mitchell, Rochester, N. Y.; University and Bellevue Hospital Medical College, 1908; member of the Medical Society of the State of New York; on the staffs of the Rochester General and Park Avenue hospitals; aged 51; was found dead in bed, August 18.

Gomer Edward Metherell ✠ Rockford, Ill.; Bennett Medical College, Chicago, 1911; aged 37; died, September 10, at the Johns Hopkins Hospital, Baltimore, of injuries received when the automobile in which he was driving was struck by a train some months ago.

William Alonzo Searl ✠ Cuyahoga Falls, Ohio; Cleveland College of Physicians and Surgeons, 1895; member of the American Psychiatric Association; formerly medical director of the Fair Oak Villages and Cottages; aged 63; died, October 2, of heart disease.

Thomas Joseph Carlin, Denver; Medical Department of the University of the City of New York, 1892; formerly health commissioner of Denver; for many years on the staff of St. Joseph's Hospital; aged 59; died, September 2, of chronic interstitial nephritis.

Edward Fletcher Brush, Mount Vernon, N. Y.; Bellevue Hospital Medical College, New York, 1875; Civil War veteran; formerly mayor and health officer of Mount Vernon; aged 80; died, October 3, at the New York Hospital, of senility.

Eileen Ivy Giles ✠ Bridgeton, N. J.; Woman's Medical College of Pennsylvania, Philadelphia, 1915; formerly on the staff of the Community Hospital, New York, and the Cumberland Street Hospital, Brooklyn; aged 48; died, in August.

Rufus McMillian Dunn ✠ Palestine, Texas; Medical College of the State of South Carolina, 1894; on the staff of the Palestine Sanitarium; aged 63; died, September 10, at the Highland Sanitarium, Shreveport, La., of heart disease.

John J. Sullivan, Scranton, Pa.; College of Physicians and Surgeons, Baltimore, 1882; member of the Medical Society of the State of Pennsylvania; aged 70; died, August 16, at the Mercy Hospital, of acute intestinal obstruction.

George W. Granberry, Sr., Sweet Home, Ark.; Memphis (Tenn.) Hospital Medical College, 1881; member of the Arkansas Medical Society; veteran of the Civil and Spanish-American wars; aged 78; died, August 9.

William M. Jenkins, Waxahachie, Texas; Vanderbilt University School of Medicine, Nashville, 1895; member of the State Medical Association of Texas; aged 56; died, September 12, of angina pectoris.

Moses Ritch Markey, Parish, Fla.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1916; member of the Florida Medical Association; served during the World War; aged 38; died, August 9.

Albert Edward Butterfield, San Francisco; Stanford University School of Medicine, San Francisco, 1927; on the staff of the San Francisco General Hospital; aged 26; was drowned, August 14.

Charles Edwin Zink, Middletown, Conn.; Baltimore University School of Medicine, 1900; member of the Connecticut State Medical Society; aged 53; died, September 16, of carcinoma of the liver.

Frederick Krehbiel, Delevan, N. Y.; University of Buffalo School of Medicine, 1875; for several years secretary of the local board of education; aged 84; died, September 28, of paralysis agitans.

Cassius C. Mills ✠ Muncie, Ind.; Medical College of Ohio, Cincinnati, 1888; on the staff of the Muncie Home Hospital; aged 65; died, September 8, at the "Norways" Sanatorium, Indianapolis.

Merritt Owen Hoover ✠ Chicago; Jenner Medical College, Chicago, 1905; formerly on the staff of St. Elizabeth's Hospital, where he died, September 30, of atrophic cirrhosis of the liver, aged 55.

John Matthew Waid, Titusville, Pa.; University of Pittsburgh School of Medicine, 1888; member of the Medical Society of the State of Pennsylvania; aged 68; died, June 3.

Erle Ridley Mulherin, Brownsville, Tenn.; University of Tennessee College of Medicine, Memphis, 1905; aged 47; died, August 24, following a long illness.

William Lilliendahl, Vineland, N. J.; Hahnemann Medical College and Hospital of Philadelphia, 1893; aged 63; was shot and killed, September 15.

J. K. McClain, Star City, Ark.; Louisville (Ky.) Medical College, 1878; aged 77; died, July 2, at Little Rock, of senility.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

PERUNA—ANCIENT AND MODERN

Alcohol Increased Thirty-Three Per Cent and Senna Taken Out

The Eighteenth Amendment and the Volstead Act gave a great stimulus to one branch of the "patent medicine" industry—that devoted to the exploitation of alcoholics sold under the guise of home remedies. THE JOURNAL has at different times discussed at some length some of the newer forms of patent-medicine "booze" that have flourished mightily since national prohibition came on the statute books. There was the case of "Lyko," put out from Kansas City, Missouri, by a concern whose incorporators were the employees of a distilling company. When analyzed in the Chemical Laboratory of the American Medical Association, Lyko was found to have an alcoholic content of over 20 per cent and insufficient medication to prevent its use as a beverage.

"Tona-Vin," which tasted like cheap sherry, with a dash of wild cherry and bitters, was also analyzed by the A. M. A. Chemical Laboratory, and was found to contain 18 per cent of alcohol and an insignificant amount of medication. It was put out by a concern that dealt in toilet articles, under a permit issued by the Bureau of Internal Revenue. Then, too, there was "Vita-Pep." This admittedly had, for its base, wine with an alcohol strength of 16 per cent—a fact especially stressed in the advertising. It was claimed to contain, in addition, rennin, pepsin and some vitamin B concentrate—three substances which could not in the least interfere with its use as a beverage. Vita-Pep was advertised and sold by the case, special prices being made to those who would buy five cases. It was said to "take away that tired, run-down feeling"—and, doubtless, it did. We might also discuss "Tanlac," and its later imitation, "Karnak," the latter being put on the market by individuals who, having previously been employed by the "Wine of Cardui" and "Tanlac" concerns, might be looked on as experts in their line.

All of these products, however, are comparative newcomers; in fact, excepting Tanlac, all seem to have come into existence subsequent to the advent of national prohibition. There have been, however, on the market for many years old-timers in the field of alcoholic nostrums that still seem to be going strong. "Hostetter's Bitters" and "Peruna" immediately come to mind as leaders in their class. Hostetter's Bitters has for years contained 25 per cent alcohol—one-half the strength of straight whisky. It still contains it. Peruna has had a more variable career; at least, its career is more obviously diversified, because for some years the manufacturers of Peruna have given a list of what purports to be the drugs that preparation contains.

The history of Peruna, so far as its alcohol content is concerned, is doubtless well remembered by most physicians. Originally containing about 27 per cent alcohol and very little else, its use as a beverage in those parts of the country that were at that time nominally "dry" was notorious. Cases of acute and chronic alcoholism, and even, in some cases, of death from its use are matters of record. In August, 1905, the Office of Indian Affairs at Washington notified all Indian agents that the sale of Peruna to the Indians was absolutely prohibited, on the ground that "as a medicine, something else can be substituted; as an intoxicant, it has been found too tempting and effective." In November, 1905, the Bureau of Internal Revenue classed Peruna as an alcoholic compound advertised and sold as a medicine, but without the addition of drugs in sufficient quantity to change materially the character of the alcoholic liquor. As a result, S. B. Hartman, the millionaire owner of Peruna, found himself in the predicament of either having to have his stuff sold under a liquor license, or to modify his formula in such a way that the product could no longer be used as a beverage. He chose the latter course and added sufficient senna to his formula to satisfy the Internal Revenue Department that Peruna could no longer be used for beverage purposes. This so hurt the sale of the preparation that Hartman attempted to recoup his losses by putting the old senna-less Peruna on the market under another name, even though it could only be sold under liquor license restrictions.

The federal Food and Drugs Act, which went into effect, January 1, 1907, required the declaration of the presence and amount of alcohol in all "patent medicines." The new labels on Peruna that appeared after this date showed that the alcohol content had been cut down from 27 per cent to 20 per cent.

Some years later national prohibition was enacted, and the Peruna concern further cut down the alcohol in its nostrum from 20 per cent to 12 per cent. This was for the product sold on the domestic market; the Peruna sold for export still contained 20 per cent.

Now, within the past few months, another change has taken place. The manufacturers of Peruna have *added* 6 per cent alcohol and have taken out the senna! They have also taken out golden seal, which for some years has been one of the alleged ingredients. On the other hand they have added wild cherry, gentian and potassium iodide, which, so far as the manufacturer's own statements show, have not until the present been ingredients of Peruna.

As a matter of interest, the following tabulation, taken from material in the files of the Bureau of Investigation, shows the claims that have been made for the nonquantitative formula of Peruna at various stages of its career. Before the passage of the Food and Drugs Act, we find no record of any statements regarding its composition. Since that time, there have been at least four different formulas claimed, not counting the change in alcohol percentages. Thus:

ABOUT 1907	ABOUT 1910	ABOUT 1920	1927
Alcohol, 20%	Alcohol, 20%	Alcohol, 12%	Alcohol, 18%
Turkey Corn	Turkey Corn	Turkey Corn	Turkey Corn
Horse weed	Horse weed	Horse weed	Horse weed
Oil of cubebs	Cubebs	Cubebs	Cubebs
Balsam copaiba	Oil of copaiba	Oil of copaiba	Oil of copaiba
Oil of cedron	Cedron seeds	Buckthorn	Buckthorn
Calisaya bark	Ginger	Ginger	Ginger
Buchu leaves	Golden seal	Golden seal	Wild cherry
	Glycerin	Glycerin	Glycerin
	Senna	Senna	Gentian
		Boneset	Boneset
		Squills	Squills
			Potassium iodide

The theory under which alcoholic "patent medicines" are supposed to be tolerated by the Internal Revenue Department is that they shall contain the minimal amount of alcohol possible. Just why the manufacturers of a nostrum with a history behind it such as Peruna has should have been permitted to increase the alcohol content of their preparation 33 per cent is another of those mysteries that only government bureaus can explain.

Sciatic Pain.—Since the time of Cotunio, chiefly through the efforts of neurologists, the symptomatology of sciatica has been increasingly well defined, and today we may say that we have the complete clinical picture, and the differential diagnosis is easy. The same cannot be said of the pathology, which remains obscure in many respects. Orthopedic surgeons began to occupy themselves with the subject of sciatica when it was found that in many cases it was associated with deformities, and often took origin from malformations and diseases of the skeleton. Charcot was one of the first to draw attention to the frequent association of sciatica with vertebral deformity, and Brissot first coined the term "sciatic scoliosis," that is to say, lateral curvature due to sciatica. I already denoted sciatica a symptom, and such, I think, it should be considered, at any rate from the clinical standpoint. It is only when the pain is due to direct involvement of the nerve by the pathological process that sciatica can be considered a primary disease, and this is rare.—Putti, V.: New Conceptions in the Pathogenesis of Sciatic Pain, *Lancet*, July 9, 1927.

Correspondence

CALCIUM CARBONATE IN GASTRIC ULCER

To the Editor:—Apropos of the treatment of gastroduodenal ulcer by the use of calcium carbonate, ably sponsored by Loevenhart and Crandall in THE JOURNAL, May 14, it is of historical interest to note the routine employment of this drug in the treatment of ulcer nearly a century ago (1829) by Cruveilhier, who, according to Hemmeter, was the first to describe clearly and distinguish pathologically this condition. In the Guide du médecin praticien, published by Valleix in 1853, page 564, this distinguished physician of L'Hôpital de La Pitié cites and recommends the treatment of Cruveilhier and likewise that of Rokitanski, published in 1839, in both of which calcium carbonate (l'eau de chaux) is administered two or three times daily as an adjunct to a milk diet.

In support of Loevenhart and Crandall's intolerance of adherence to a fixed ratio of drugs as in the Sippy program, the summarizing paragraph of Valleix's description of treatment might be quoted: "Must I now present a summary and rules? I think not: for this would be choosing to give an air of precision to a subject which, in the actual state of science, cannot be had. It is necessary that the physician know that which has been put to use, but he is not to believe, without an attentive and preliminary study in order to consider the conditions which this case presents to him and the means to combat them."

WARREN WOODEN, M.D., Rochester, N. Y.

THE MEDICAL EXAMINER SYSTEM

To the Editor:—In the interesting article in THE JOURNAL, August 20, on the Medical Examiner System, there is a slight error in the historical part. It is stated that "the first formal statute after Magna Charta dealing with the Coroner is that of Edward the Confessor in the year 1276 (4. Ed. 1., de officio coronatoris)." Edward the Confessor was of course the last but one of the Saxon kings and lived more than 150 years before Magna Charta. He was a great saint, starting the building of Westminster Abbey, but not a wise king. Edward I, a wise king, was far from being a saint.

May I express in conclusion the gratification that I, along with many other Canadians, feel in the increasing interest shown in the better class of American publications in the history of our common mother.

J. GRAHAM HARKNESS, M.D., St. Catharines, Ont.

BAKING POWDER AND KIDNEYS

To the Editor:—In Delafield and Prudden's Pathology is a figure representing the kidney in advanced pyelonephritis. The Calumet Baking Powder Company is circularizing the medical profession with a booklet by one Marian Jane Parker, attempting to prove that the potassium tartrate present in food prepared with cream of tartar baking powder will produce Bright's disease. To enlighten the medical profession as to what Bright's disease is, the booklet presents Delafield and Prudden's cut of the kidney of pyelonephritis with the label "A very advanced stage of Bright's disease. The whole kidney becomes eaten away."

The Calumet Baking Powder Company says you will be poisoned by potassium tartrate if you use Royal Baking Powder. The Royal Baking Powder says you will be poisoned by alum if you use Calumet Baking Powder. Can one be so foolhardy, in the light of this chemical knowledge, as to take anything but old-fashioned sour milk and saleratus biscuits with his bootleg liquor?

RAMSAY SPILLMAN, M.D., New York.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

STALENESS OF BREAD

To the Editor:—Please let us know the process that happens when bread becomes stale? Please omit name. M.D., South Carolina.

ANSWER.—The explanation of the process of the growing stale of bread has not yet been satisfactorily clarified by the physical chemist, although the problem has been studied by various able investigators, from Boussingault in the fifties to J. R. Katz of Amsterdam, who in 1913 undertook extensive work for the Dutch government on this problem, and the more recent observations of W. Oswald published in the *Kolloid-Zeitschrift* in 1919 and subsequent years, and also that of R. Whymper of London in 1919 and since.

None of these investigations are in complete agreement on the mechanism of the growing stale of bread. It is probable that the process is not due entirely, as is popularly supposed, to drying out or loss of moisture from the bread, since the loss of water under ordinary conditions of temperature and humidity is relatively slow, while the characteristics associated with staleness, crumbliness of crumb, character of crust, and change in flavor proceed at a much more rapid rate in comparison. That staling is not wholly due to loss of moisture was first shown by Boussingault in 1853, who placed bread in sealed containers in an atmosphere of water vapor. Under these conditions he observed changes associated with staleness.

Bread loses moisture continuously when exposed to the atmosphere, the rate of loss depending largely on the temperature and the humidity. Bread from 40 to 50 years old will usually contain about the same amount of moisture as is found in flour, and an analysis of old bread in terms of protein, carbohydrate, fat and ash, when calculated to the basis of dry solids, is similar to that of fresh bread.

In terms of approximate analysis there is but little appreciable chemical difference between fresh and stale bread, although stale bread is characterized by a decrease in the amount of soluble polysaccharides (starch and dextrins). There is also some difference in the taste and the acidity or p_H of stale and fresh bread, and some changes in the composition of the fat in very old and stale bread.

Both Katz and Oswald agree that most of the water present in bread is held by the starch that has been gelatinized in baking. It might be observed in this connection that the proportion of the starch that has been gelatinized is variable and is not as high as some observers appear to have assumed. It is well known that starch pastes or starch gels change in physical condition with time of standing. Some of the starch settles out and becomes more insoluble, and water separates at the same time. This phenomenon takes place more slowly at high than at low temperatures. The spontaneous exudation of water from gels has been termed "syneresis" by Graham, the father of colloid study. Oswald suggests an analogy between "syneresis" and the staling of bread, and suggests that staling is largely due to such a typical colloidal change in the starch of the bread, and that changes in the coagulated bread protein are of secondary importance.

When bread is removed from the oven, the starch gel apparently holds most of the water, and as the bread cools the starch changes in colloidal state and becomes more insoluble; water is given up to other constituents, especially the coagulated protein, though some is evaporated. This process is a reversible one, since stale bread with a not too low moisture content can be freshened by heating in the oven, as has been known for centuries by housewives.

It is thus probable that the influence of temperature on the development and degree of staling is of great importance, as has been shown by Katz in extensive experiments. Katz observed that bread crumb remained fresh between certain limits, from 50 to 100 C. and at very low temperatures —190 (liquid air), and stale between 25 and 0 C. At ordinary temperatures, then, stale bread is the stable form of the system. He explains this behavior on the basis of considerations relative to physicochemical equilibrium and compared it in his first paper to the analogous behavior of the allotropes of sulphur, and later to the dissociation of nitrogen peroxide under the influence of temperature and pressure,

and also to salt hydrates such as copper sulphate. Such analogies are rather wide of the mark in such a system as bread, as Oswald and others have pointed out, but the theory is at least interesting and worthy of mention.

It is also interesting to note that the effects of certain chemical compounds which may act catalytically in delaying staling have been observed by Katz and others.

The growing stale of bread is largely due to the influence of temperature on the physicochemical properties of the bread after its removal from the oven (baking) to its final consumption.

The colloidal system termed bread is highly complicated, but the transition undergone by the starch gel in becoming more insoluble is apparently one of the chief factors in the process.

The rate and degree of staling shown by baked products varies, as might be expected, according to the ingredients used and the conditions surrounding fermentation, baking and storage.

The influence of the various bread-making ingredients, the physical condition of the starch granules, and the amount and character of inorganic constituents are some of the other important factors to be considered in the problem of staleness.

What staleness is from the consumer's standpoint is another question that is obviously an economic one of importance, though at present it is almost entirely considered from the point of view of the individual palate. Much good food is utterly wasted because it is termed "stale." "Stale" bread is as nutritious as "fresh" bread when protected from mold and contact infection.

DIAGNOSTIC METHODS IN WHOOPING COUGH

To the Editor:—The editorial on diagnostic methods in whooping cough in THE JOURNAL, August 27, was taken up at the last meeting of the Pediatric Society of Southern California with interest. We are anxious to know whether any practical application has been made along these lines, and if so where, when and how. If such a procedure can be put to practical use, we as a society are anxious to adopt and prosecute such methods here in San Diego. ROBERT SHARP, M.D., San Diego, Calif.

ANSWER.—The cultural methods of diagnosis of whooping cough referred to in the editorial in question have been in use in Denmark for several years and are in practical use also in Belgium. The introduction of this method of diagnosis in Denmark was discussed editorially at the time (THE JOURNAL, Feb. 10, 1917); see also Madsen, T.: Whooping Cough: Its Bacteriology, Prevention and Treatment, *Boston M. & S. J.* **192**:50 (Jan. 8) 1925.

VITAMIN IN WHEAT GERM OIL

To the Editor:—Please inform me as to the following points in reference to the paper on "The Relation of Vitamin E to Iron Assimilation," by Simmonds, Becker and McCollum (THE JOURNAL, April 2, 1927, p. 1047). What is wheat germ oil and where can it be obtained? What is the human dose? A. L. LUCHI, M.D., Wilkes-Barre, Pa.

ANSWER.—Wheat germ oil is obtained from the kernel of the wheat. It is rich in vitamins B and E, and also contains some A. All the oil so far used for experimental work has been prepared in individual research laboratories. It is reported that a commercial preparation will be available some time in the early fall, refined wheat germ oil which will be marketed for its vitamin E content. While experiments are not as yet completed, the data so far obtained suggests that the dosage will probably be the same as for cod liver oil.

USE OF OPIATES IN HEMOPTYSIS

To the Editor:—I recently read somewhere, in THE JOURNAL, I believe, that morphine sulphate was not indicated in the treatment of severe pulmonary hemorrhages of incurable tuberculosis. Will you kindly outline the treatment for the condition mentioned?

E. T. ANDERSON, M.D., San Jose, Calif.

ANSWER.—Whether the patient is curable or not, the treatment should be directed toward control of the bleeding. First, the patient should be placed in the position most comfortable to him, whether high on pillows or low down, even flat. He must be kept as quiet as possible; he should not be lifted to spit; it will suffice to turn the head to one side, except in massive hemorrhages, when the patient may have to be raised to clear the air passages. While cold drinks and scanty diet are prescribed, some observers do not ascribe much importance to them. Epsom salt in cathartic doses has been recommended as a specific. Its value lies in the fact that prompt evacuation of the bowels is obtainable without discomfort. Possibly there is some derivation of blood to the abdomen as a result, but not enough to be a deciding factor in treatment. Of great value is the use of atropine in doses of from 0.8 to 1.3 mg. every three hours. Powdered suprarenal capsule has been used with some satisfactory results. The dose is 0.13 Gm. every three hours. Opiates may be used in small doses and in such amount only as to secure the patient against severe coughing. Not enough opiate should be used absolutely to stop the cough. One may use codeine, 16 mg. every two or three hours with good results. The opiate should be stopped when the indication—severe cough—has disappeared.

Blood which remains in the bronchial tree for long becomes foul and is a factor in the causation of bronchopneumonia, which not infrequently follows pulmonary hemorrhage. Not to be forgotten is artificial pneumothorax, which is often the means of completely stopping hemorrhage.

SUCCUS CINERARIA FOR CATARACT

To the Editor:—The Walker Pharmacal Company of St. Louis is putting up a preparation under the name of Succus Cineraria Maritima for which it claims good results in the treatment of cataract and other opacities of vision. In a booklet of testimonials, several physicians testify to the effectiveness of this preparation. From a certain symptom, a spot in the field of vision changing its position with the movement of the eyeball and disappearing when the eye rests, as when concentrating in the act of reading or looking at some distant object, it makes me think of an incipient cataract. An eye man would account for this symptom either to a spot he could see floating in the vitreous or to a peripheral thickening in the lens. My vision so far is unimpaired. It so happens that this right eye is the better of the two. As the other eye is highly myopic and of not much use, to develop cataract in the good eye spells calamity to me. What is your unbiased opinion of the preparation mentioned? What is the consensus in the profession in reference to this preparation? Is it harmless? R. FISHER, M.D., New York.

ANSWER.—What could one expect in a book of testimonials for an unapproved proprietary preparation? Poor results? Such unbounded confidence led Barnum to make the remark that was heard round the world. As far as actual proof exists today, there is no known substance, organic, inorganic or combination, that will arrest definitely the progress of an incipient cataract. Many incipient cataracts advance so slowly that present-day methods cannot measure the progression, and the therapeutic victories reported from all over the world, employing this, that or the other method, undoubtedly have been in conjunction with this type. First, be sure that the condition is cataract. Let an oculist dilate the pupils and examine the lens with the slit lamp and if possible photograph it. Then wear the proper correction, keep the physical condition up to par, and use the eyes without abuse. Repeat the examination in from six months to a year, and then an estimate can be made as to the rate of progression of the cataract, if there is one.

LIQUID PETROLATUM A VITAMIN SOLVENT

To the Editor:—In the leading editorial in THE JOURNAL, August 27, it is brought out that liquid petrolatum is a solvent for vitamin A and that persons taking liquid petrolatum may find themselves deficient in vitamin A intake. Some years ago investigators at St. Louis advanced the hypothesis that the lack of vitamin A in tissues may be a causative factor in cancer, and in the Scientific Exhibit at Dallas, if I recall correctly, showed results of experiments indicating malignancy in tissue after extracting vitamin A. It is also known that experimental cancer may be produced by crude petroleum, though the causative agent has not been thought to be the "petrolatum" type of hydrocarbons but rather irritating substances, such as anthracene. In view of your editorial, I wonder whether there is any close relationship between these three observations. L. N. P., Winnetka, Ill.

TREATMENT OF PRIAPISM

To the Editor:—In Queries and Minor Notes, October 1, appears an inquiry by M.D., Oklahoma, regarding relief from priapism.

Recently I treated a patient for this condition, which, however, followed an injury. Like the case described, nearly everything in the way of hot and cold applications was tried to no avail, in addition to the usual methods of medication.

The one thing that finally gave relief was an application of ethyl chloride to the perineum; in applying this, care was taken not to involve the testes. The ethyl chloride was applied to the point of freezing or blanching the tissues, and no further.

The result was almost immediate reduction of the priapism, and after a few days another application produced complete reduction, with no recurrence as far as known. F. E. NAGEL, M.D., Chicago.

Acting Assistant Surgeon, U. S. Public Health Service.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

AMERICAN BOARD FOR OPHTHALMIC EXAMINATIONS: Memphis, Nov. 14. Sec., Dr. William H. Wilder, 122 S. Michigan Ave., Chicago.

ARKANSAS: Little Rock, Nov. 8-9. Sec., Reg. Bd., Dr. J. W. Walker, Fayetteville; Sec., Eclec. Bd., Dr. C. E. Laws, Ft. Smith.

CONNECTICUT: Hartford, Nov. 8-9. Sec. Reg. Bd., Dr. Robert L. Rowley, 79 Elm St., Hartford. Sec., Homeopathic Bd., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven.

DELAWARE: Wilmington, Dec. 13-15. Sec., Reg. Bd., Dr. Henry W. Briggs, Wilmington. Sec., Homeo. Bd., Dr. Henry W. Briggs.

FLORIDA: Winter Haven, Nov. 14-15. Sec., Dr. W. M. Rowlett, 812 Citizens Bank Bldg., Tampa.

MAINE: Portland, Nov. 8-9. Sec., Dr. Adam P. Leighton, 192 State St., Portland.

MARYLAND: Baltimore, Dec. 13-16. Sec., Dr. Henry M. Fitzhugh, Baltimore. Sec., Homeo- Bd., Dr. J. S. Garrison, Baltimore.

MASSACHUSETTS: Boston, Nov. 8-10. Sec., Dr. Frank M. Vaughan, 144 State House, Boston.

MISSOURI: Kansas City, Oct. 25-27. Sec., Dr. James Stewart, Jefferson City.

NEBRASKA: Lincoln, Oct. 31-Nov. 2. Sec., Mr. Lincoln Frost, Lincoln.

NEVADA: Carson City, Nov. 7. Sec., Dr. Edward E. Hamer, Carson City.

NORTH CAROLINA: Greensboro, Dec. 1. Sec., Dr. John W. MacConnell, Davidson.

OHIO: Columbus, Dec. 7-9. Sec., Dr. H. M. Platter, Columbus.

SOUTH CAROLINA: Columbia, Nov. 8. Sec., Dr. A. Earle Boozer, 505 Saluda Ave, Columbia.

TEXAS: Fort Worth, Nov. 15-17. Sec., Dr. T. J. Crowe, 918-19 Mercantile Bank Bldg., Dallas.

VIRGINIA: Richmond, Dec. 6-9. Sec., Dr. J. W. Preston, Roanoke.

WEST VIRGINIA: Morgantown, Nov. 22. Sec., Dr. W. T. Henshaw, New Capitol Bldg., Charleston.

WISCONSIN: Milwaukee, Dec. 17. Sec., Basic Science Bd., Prof. M. F. Guyer, Madison.

THE QUARTER SYSTEM IN MEDICAL LICENSURE

An investigation by the Council on Medical Education and Hospitals shows that the phraseology of the medical practice laws of the following seventeen states apparently is such as to prevent a student from completing his four medical college years of thirty-two weeks each in three calendar years:

Arkansas	Illinois	Minnesota	North Dakota
Colorado	Indiana	Nebraska	Ohio
Connecticut	Kansas	New Jersey	Pennsylvania
Delaware	Kentucky	New York	Virginia
Georgia			

The following thirty-two states have no such legal restrictions regarding the medical course, so that the better grade students are enabled to save a year of time without diminishing either the actual hours of study or the thoroughness with which the instruction is given:

Alabama	Maine	New Hampshire	Tennessee
Arizona	Maryland	New Mexico	Texas
California	Massachusetts	North Carolina	Utah
Dist. of Col.	Michigan	Oklahoma	Vermont
Florida	Mississippi	Oregon	Washington
Idaho	Missouri	Rhode Island	West Virginia
Iowa	Montana	South Carolina	Wisconsin
Louisiana	Nevada	South Dakota	Wyoming

Under the quarter system in medical colleges, the summer session would be given as thoroughly as that of any other part of the year and the work of any three consecutive quarters would constitute a college year. It is hoped, therefore, that eventually all state laws may be so modified as to permit medical students to save this year of valuable time if they are physically and educationally able to do so.

Alabama July Examination

Dr. Samuel W. Welch, secretary of the Alabama Board of Medical Examiners, reports the written examination held, July 12-15, 1927, at Montgomery. Twenty-six candidates took the examination, all of whom passed. Ten candidates were licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Number Passed
Howard University School of Medicine		(1926)	1
Emory University School of Medicine, Atlanta		(1927)	6
Rush Medical College	(1927, 2),*	(1927)	3
University of Illinois College of Medicine		(1927)*	3
Indiana University School of Medicine		(1927)	1
Tulane Univ. of Louisiana School of Med.	(1926), (1927, 7)		8
Jefferson Medical College of Philadelphia		(1926)	1
Meharry Medical College		(1927)	1
University of Tennessee College of Medicine		(1926)	1
Dalhousie University Faculty of Medicine		(1925)	1

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Emory University School of Medicine		(1926)	Georgia
Rush Medical College		(1926)	Illinois
State University of Iowa College of Medicine		(1924)	Iowa
University of Louisville School of Medicine		(1926)	Kentucky
University of Pennsylvania School of Medicine		(1921)	Penna.
University of Tennessee College of Medicine		(1907) (1926)	Kentucky Tennessee
Vanderbilt University School of Medicine		(1923), (1926, 2)	Tennessee

* These candidates will receive their M.D. degrees on completion of a year's internship in a hospital.

Michigan June Examinations

Dr. Guy L. Connor, secretary of the Michigan Board of Registration in Medicine, reports the written examination held, June 15-16, at Ann Arbor, and June 21-22, at Detroit, respectively. The examinations covered 14 subjects and included 100 questions. An average of 75 per cent was required to pass. One hundred and ninety-nine candidates took the examinations, all of whom passed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
Loyola University School of Medicine		(1927)*	84.8
Northwestern University Medical School		(1927)	81.7, 83.9
Johns Hopkins University School of Medicine		(1925)	80.9
Harvard University Medical School		(1925)	82.9, (1926) 84
Detroit College of Medicine and Surgery	(1927)* 80.3, 80.7, 81.5, 81.7, 81.8, 81.9, 82.1, 82.2, 82.3, 82.5, 82.5, 82.6, 82.6, 82.9, 83, 83.1, 83.2, 83.4, 83.6, 83.8, 83.8, 84.4, 84.5, 85.3, 85.5, 85.6, 85.7, 85.8, 85.8, 85.8, 86.1, 86.3, 86.5	(1927)	83.2, 84.4,
University of Michigan Medical School	84.6, 84.7, 85.2, (1927) 79.7, 80.4, 80.6, 81.1, 81.5, 81.8, 81.8, 82, 82.1, 82.1, 82.3, 82.3, 82.4, 82.6, 82.9, 83.1, 83.1, 83.2, 83.3, 83.4, 83.4, 83.4, 83.4, 83.5, 83.5, 83.5, 83.5, 83.6, 83.6, 83.7, 83.8, 83.8, 83.9, 84, 84, 84.2, 84.3, 84.3, 84.3, 84.3, 84.3, 84.4, 84.4, 84.4, 84.4, 84.4, 84.5, 84.5, 84.5, 84.5, 84.5, 84.6, 84.6, 84.6, 84.6, 84.6, 84.7, 84.7, 84.7, 84.9, 84.9, 85, 85, 85, 85, 85.1, 85.1, 85.1, 85.2, 85.3, 85.4, 85.5, 85.5, 85.5, 85.5, 85.7, 85.7, 85.8, 85.9, 86, 86, 86, 86.1, 86.1, 86.1, 86.2, 86.2, 86.3, 86.4, 86.5, 86.5, 86.8, 86.9, 87.1, 87.1, 87.3, 87.5, 87.5, 87.6, 87.7, 87.7, 87.9, 89, 89.3, 89.8	(1926)	82, 84,
St. Louis University School of Medicine		(1927)	81.5, 86.1
Washington University School of Medicine		(1924)	84.3
University of Nebraska College of Medicine		(1925)	80.9
Columbia University College of Phys. and Surgs		(1925)	82.8
Syracuse University College of Medicine		(1924)	84.5
University and Bellevue Hospital Medical College		(1910)	82.9
Ohio State University College of Medicine		(1924)	83.9
University of Oregon Medical School		(1925)	85.9
Meharry Medical College		(1908)	87.2, (1926) 81.3
Dalhousie University Faculty of Medicine		(1921)	81.3, (1926) 80.5
McGill University Faculty of Medicine	(1924) 82.4, (1925) 86.8, (1926) 83.2	(1922)	77.5,
Queen's University Faculty of Medicine		(1922)	82.7
University of Toronto Faculty of Medicine	(1922) 82.4, (1923) 81.6, 85.6, 87.3, (1924) 82.4, 84.6, 85.6, 86, 86.4, (1925) 84.3, 84.5, (1926) 81.5, 82.4, 82.7, 83.4, 84, 85.6, 86.1, 86.5	(1910)	82.5,
University of Western Ontario Medical School	(1926) 83.4, (1927) 82.2	(1923)	84.3, 86.2,
University of Liége, Belgium		(1923)†	85.6
University of Donskey, Russia		(1920)†	80.1

* These candidates have finished their medical courses and will receive their M.D. degrees on completion of a year's internship in a hospital.
† Verification of graduation in process.

Delaware June Examination

Dr. Henry W. Briggs, president of the Medical Council of Delaware, reports the practical and written examination held, June 21-23, 1927, at Wilmington. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Three candidates, including one osteopath, were examined, all of whom passed. One candidate was licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
University of Oklahoma School of Medicine		(1926)	85.4
Jefferson Medical College of Philadelphia		(1926)	84.7
Osteopath			79.5

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Illinois College of Medicine		(1923)	Illinois

Book Notices

AN INTRODUCTION TO NEUROLOGY. By C. Judson Herrick, Professor of Neurology in the University of Chicago. Fourth edition. Cloth. Price, $2.75 net. Pp. 406, with 140 illustrations. Philadelphia: W. B. Saunders Company, 1927.

The present edition of this justly popular introduction to neurology merits the same praise that has been accorded the previous editions. The subject matter is arranged in three groups. Chapters I to VII discuss the more general neurologic topics. Chapters VIII to XVIII comprise a brief account of the form of the nervous system and the functional significance of its chief subdivisions in general, followed by a review of the architectural relations of the more important functional systems. Chapters XIX to XXI are devoted to the cerebral cortex and its functions. The chapters on the cerebellum and sympathetic nervous system have been entirely rewritten; all the text has been carefully revised in the light of current research, and numerous references to important recent works have been added. The material is so simply described and so interestingly presented that much of the conditioned fear of the subject is immediately dispelled. The accurate and concise analysis of physiologic and psychologic mechanisms in the light of the most recent investigations forms an astonishingly complete nucleus for the inevitable subsequent development of broad and useful knowledge of the subject. This volume can be recommended not only for use by medical and other students, but as a stimulating reminder of a fascinating subject to physicians as well.

ZELLAUFBAU DER GROSSHIRNRINDE DES MENSCHEN. Von Dr. Constantin von Economo, Professor der Neurologie und Psychiatrie an der Universität Wien. Paper. Price, 18 marks. Pp. 145, with 61 illustrations. Berlin: Julius Springer, 1927.

Since the days of Meynert it has been recognized that the brain, which macroscopically appears uniform, is made up of a number of "organs," each of which possesses a specific structure and function. Through the work of Meynert's successors, his teaching was broadened considerably. At present the cortex may be pictured as a map of 109 areas each possessing a specific histologic structure. In 1925 Economo and his co-worker Koskinas published a large contribution which embodied everything of importance pertaining to the structure of the cerebral cortex. As this contribution is not only extensive but also expensive, costing $150, it became imperative to take up the same subject in a concise form. Economo accomplished this in the form of ten lectures. He sketches in a remarkably clear and concise manner the wonderful progress made in the study of the refined anatomy of the cortex, supporting his view by sixty-one illustrations, forty-six of which are photomicrographs. In the first two lectures he gives a general review of the cell structure of the cortex; the third and fourth lectures are devoted to the discussion of the frontal lobes; the fifth and sixth to the parietal lobes; the seventh and eighth to the occipital and temporal lobes, respectively, and the ninth and tenth to the median surface of the brain—the organs of smell. Though of a primary interest to neurologists and neuro-anatomists, Economo's book should also be of value to psychiatrists, psychologists, anthropologists, beginners and advanced research workers.

PRACTICAL PEDODONTIA OR JUVENILE OPERATIVE DENTISTRY AND PUBLIC HEALTH DENTISTRY. An Introductory Text for Students and Practitioners of Dentistry. By Floyde Eddy Hogeboom, D.D.S., Instructor in Pedodontia, College of Dentistry, University of Southern California. Second edition. Cloth. Price, $3.50. Pp. 108, with 77 illustrations. St. Louis: C. V. Mosby Company, 1927.

In this edition many additions have been made that are distinctly beneficial to the work from a practical standpoint. As in the first edition there is considerable space given to embryology. On this subject there is nothing new reported, but it has been well condensed and treated in a fashion such as to make it very readable. The chapters on cavity preparation and filling materials are sketchily but well written and conform to standard practices. Nine pages with illustrations are devoted to the six year molars. Their importance and care are properly emphasized. There is a great variance in the opinions of men regarding root canal therapy as it is taught in the various dental schools, and no doubt Dr. Hogeboom will meet some opposition to his position on that subject. However, he outlines a definite treatment which has possibly as much merit as any now being taught. It is a subject needing a great deal of further investigation. Three pages are devoted to nutrition. Much more space might well have been given this all important subject. The material given is concise and reliable. The remainder of the book deals with the problems of prophylaxis and public health dentistry. These subjects have been well handled and the charts are valuable. All in all, the book is so compiled that it would prove an asset to any dental library. There has been need for such a work, and Dr. Hogeboom is to be congratulated for his contribution.

DIE PATHOGENEN MIKROORGANISMEN DES AUGES. Von Prof. Dr. F. v. Herrenschwand. Paper. Price, 24 marks. Pp. 310, with 19 illustrations. Berlin: Urban & Schwarzenberg, 1927.

This textbook of pathologic bacteria and parasites of the eye is arranged in three parts, general, special and technical. In the special portion the author describes the morphology of each known organism that invades the eye or its appendages. There are chapters on the inclusion bodies in trachoma, herpes of the cornea, and micro-organisms found in sympathetic ophthalmia. The bibliographies for all chapters are quite complete. The chapter on technic gives that found in any general textbook and, in addition, the method of Linder of obtaining epithelial scrapings for examination of conjunctival infections. The last chapters, on animal experimentation, staining and methods of culture, are similar to those of all general bacteriologies. The book is of interest to ophthalmologists chiefly because of the short accounts of the organisms affecting the eye which are omitted from most general textbooks. The colored plates follow those of general works and only two picture the epithelial cell scrapings of the conjunctiva, which are so important to the ophthalmologist.

LEADERSHIP: A Manual on Conduct and Administration. By William Colby Rucker, M.S., M.D., Dr.P.H., Surgeon, United States Public Health Service. Cloth. Price, $2.25. Pp. 171. New York: Macmillan Company, 1926.

Dr. Rucker has prepared in brief form the picture of an ideal officer of the United States Public Health Service. Obviously, the factors that make for leadership in that service are the same as would make for success in any field, according to modern standards. They involve common sense, earnestness, sense of humor, honor, truthfulness, loyalty and cleanliness, as well as many of the other fundamental virtues that every man ought to have, but which most men have to a limited extent. No doubt, a perusal of Dr. Rucker's book will make any officer think—that in itself is a commendable result.

GLYCOGÈNE, ADRÉNALINE ET INSULINE. Par M. Jacot. Paper. Price, 35 fr. Pp. 209. Paris: Masson & Cie, 1926.

This volume reports an extremely interesting investigation of some phases of carbohydrate metabolism. It represents a prodigious amount of work, and the experiments are carefully reported. The two most important conclusions which the author draws from his experimental results are that epinephrine causes the dissemination of glycogen (evidently glycogenolysis) by a physicochemical effect, which is indicated by an excessive brownian movement of granules of glycogen in the presence of epinephrine, and that glycogen accelerates the oxidation of epinephrine. The first conception is manifestly a theory and needs confirmation and investigation from various other angles. The second conception of the action of glycogen as an oxidizing agent is quite new, as is the author's deduction that dextrose also acts in this fashion. Further confirmation will certainly be needed before the idea can be accepted that a substance like dextrose, which in the past has been considered essentially a reducing agent, can act also indirectly as an oxidizing agent. Nevertheless, a recent communication by Harned (*J. Biol. Chem.* **74**:xlvii [July] 1927) reports results by using an entirely

different technic, which also indicate that during the process of oxidation of dextrose, other substances can be oxidized through the agency of the dextrose. In his studies of the effect of insulin, Jacot believes that his experiments show that insulin causes flocculation of the glycogen, making it less reactive and less readily dissolved in the tissue cells. In spite of the large amount of theoretical material in this contribution, there are enough experimental facts to cause one to give the entire work serious consideration and to accept it as an exceedingly stimulating investigation which should lead to further study.

LIPPINCOTT'S POCKET FORMULARY. By George E. Rehberger, M.D. Leather. Price, $3.50. Philadelphia: J. B. Lippincott Company, 1927.

This is a compendious manual of information for the physician. Part one consists of suggestive prescriptions listed alphabetically according to the diseases in which they are to be used. A fair indication of the value or lack of value of this part may be gained from one of the first sets of prescriptions to meet the eye, that for pernicious anemia, which gives, first, hydrochloric acid and pepsin; second, solution of potassium arsenite; third, fluidextract of cascara sagrada. The various sets of prescriptions are followed by very brief suggestions for general treatment of the disease involved. Part two is a reference guide to the U. S. P., N. F., and N. N. R. The names of the various preparations contained in these volumes are given in alphabetical order with a brief statement of solubility, dosage, and actions and uses. Part three consists of various tables, such as weights, measures, and average heights and weights.

DIE PHYSIKALISCHE THERAPIE DES PRAKTISCHEN ARZTES. Herleitung allgemein gültiger Behandlungsregeln. Von Dr. George Hauffe. Paper. Price, 3 marks. Pp. 140, with 14 illustrations. Berlin: Urban & Schwarzenberg, 1926.

The title of this brochure is somewhat misleading, as the author, a follower of Schweninger, devotes the greater part of the volume to the study of hydriatrics. This shortcoming, however, is fully compensated for by the completeness of the author's investigation and the clarity with which the subject matter is treated. Hydrotherapy is fully described in a condensed form, and its historical evolution prior to and following the school of Winternitz is critically surveyed. Studies of the effect of hot, cold and steam baths, partial bathing and complete bathing on the skin, vasomotor and circulatory systems are fully recorded. The value of short or fractional bathing, popularly known as hot or cold packs, and localized steam baths is greatly stressed by the author, and the physiologic response on the cardiovascular system is fully illustrated by various plethysmographic and electrocardiographic tracings. It is the author's contention that the neglected practice of hydriatrics can be profitably prescribed by the average physician at the home of the patient, with the same effect as in the much advertised "Kurorte." The technic of all forms of application as explained by the author is simple and accessible to every practitioner without the need of costly or complicated appliances. The speculative and descriptive literary background gives this book added charm and perhaps mitigates some of its shortcomings, for it has neither an index nor a bibliography, two valuable additions in a scientific contribution.

THE ELEMENTS OF MEDICAL TREATMENT. By Robert Hutchison, M.D., F.R.C.P., Physician to the London Hospital and to the Hospital for Sick Children. Cloth. Price, $3. Pp. 163. New York: William Wood & Company, 1926.

There is always a place for the printed lectures of a respected teacher. This book fills such a place. The author writes that for many years he gave a course of lectures at the London Hospital on elementary therapeutics. His aim was to discuss principles of treatment and to outline them by application to the more common diseases. "I have often been asked by former pupils," he writes, "to publish these lectures, but never thought it worth while. Experience in examining, however, has made me come to think that there might perhaps be room for such a book as this after all." The author has accurately evaluated his own book. It is short, elementary, general, and a good review before examination. Such a book is good for any one to read from time to time, since it reestablishes general principles in the mind and serves as a prophylactic against narrowness and hobby riding in treatment. It cannot, and is not intended to, replace larger works on therapeutics.

FRAKTUREN UND LUXATIONEN. Ein kurzgefasstes Lehrbuch für Ärzte und Studierende. Von Dr. Med. K. H. Bauer, a. o. Professor für Chirurgie an der Universität Göttingen. Paper. Price, 15 marks. Pp. 236, with 237 illustrations. Berlin: Julius Springer, 1927.

The author describes his book as a condensed textbook for physicians and students. While fairly complete as an outline of the study of fractures, it is too brief to be of great value to one treating them. The illustrations include a number of excellent roentgenograms, but there is an insufficient number of actual photographs of the care of fractures. Moreover, many of the photographs of the methods of application of suspension and traction are not only posed from normal subjects but show an improper application of the apparatus in some cases. The treatment of fractures of the shaft of the femur is covered in only two pages. The literature is characterized by extreme provincialism, practically no foreign authors being quoted.

PRINCIPLES OF PHYSICAL CHEMISTRY FOR MEDICAL STUDENTS. By Phyllis M. Tookey Kerridge, M.Sc., A.I.C., Assistant in the Department of Physiology and Biochemistry, University College, London. With introduction by Prof. A. V. Hill, M.A., F.R.S. Cloth. Price, $1.75. Pp. 134, with 22 illustrations. New York: Oxford University Press, 1927.

This book is a short treatise on a few selected topics in physical chemistry. The topics discussed by no means cover the field of physical chemistry, and at least one that should be treated in every work of this kind has been omitted. For instance, radioactivity and atomic structure find no place in the book. The discussions themselves are limited; thus, Van der Waal's equation is not mentioned in the discussion of gases. In several places the author has in an interesting manner adapted physical chemical principles to physiology and physiologic chemistry.

DIAGNOSTIC DES PRINCIPAUX CANCERS. Par Henri Hartmann et autres. Paper. Price, 10 francs. Pp. 61. Paris: Masson & Cie, 1927.

By various authorities in the respective fields, the essentials for early clinical recognition of the malignant tumors of twenty-two different sites are related concisely and thoroughly. Elaborate explanation by Roussy of illustrations of carcinomas of four other places and of tonsillar lymphocytoma are included. The various accounts all appeared in the *Presse médicale* and are here available in book form, with brevity as their special merit.

KER'S MANUAL OF FEVERS. Revised by Claude Rundle, O.B.E., M.D., M.R.C.S., Medical Superintendent, City Hospitals and Sanatorium, Fazakerly, Liverpool. Third edition. Cloth. Price, $3.75. Pp. 346, with illustrations. London: Oxford University Press, 1927.

This edition continues to fulfil well its purpose of providing the necessary supplement to the student's practical work. The descriptions include the ordinary eruptive fevers, diphtheria, typhoid, typhus, erysipelas, whooping cough, mumps, and cerebrospinal meningitis. The book has been kept short enough so that there can be no difficulty in mastering the contents in a relatively short time, and it is written in Ker's usual clear and concise style. One of the introductory chapters, on the examination of rashes and throats, is especially excellent, and gives information useful to both student and practitioner. The discussion on vaccination, including the chief arguments of the antivaccinationists, should also prove valuable. The book is written from the clinical point of view, and contains five graphic descriptions of the patient's general appearance and manner in the different diseases. Some of the remedies suggested may seem a little old fashioned, the application of leeches, for instance; and the doses of diphtheria antitoxin are distinctly smaller than those usually recommended here. Brief discussion of the recent advances in bacteriology and specific therapy have been added since the previous edition. Some of these, perhaps, do not come up to the general excellence of the rest of the book. Convenient tables summarizing the important data concerning the contagious diseases are found at the end of the volume.

MALARIA: Its Investigation and Control with Special Reference to Indian Conditions. By Robert Knowles, Major, Indian Medical Service, and Ronald Senior-White, Malaria Research Officer, Central Malaria Bureau, Government of India. Boards. Price, Rs. 7/8. Pp. 220, with illustrations. Calcutta: Thacker, Spink & Company, 1927.

This is intended as a handbook for practical field and laboratory workers in regions where malaria is prevalent. The authors have modestly disclaimed originality and have expressed their indebtedness to Wenyon's Protozoology and other standard works. Some of the photographs reproduced are badly blurred in the printing and not likely to be very instructive (e. g., figure 39). Many quite elementary topics are discussed, such as the use of the iris diaphragm, and the fine adjustment. While distinctly limited in its scope and appeal, the book will undoubtedly serve a useful purpose. It is obviously based on first-hand personal experience and contains some direct observations of real value to the malaria worker.

STÖRUNGEN DES TRIEB- UND AFFEKTLEBENS (DIE PARAPATHISCHEN ERKRANKUNGEN). Vol. III. Die Geschlechtskälte der Frau. (Eine Psychopatholgie des weiblichen Liebeslebens.) Von Dr. Wilhelm Stekel. Third edition. Paper. Price, 25 marks. Pp. 559. Berlin: Urban & Schwarzenberg, 1927.

This is the third edition of the author's well known book on frigidity in women. Stekel has been characterized as one of the great romancers in the field of psychoanalysis. He has the peculiar ability to make every case report sound like a novel. The third edition of his book is elaborated by additional case reports and by several new points of view. For those who wish to be entertained in their psychoanalytic study, he is a most readable author. Those who prefer the more intricate and at the same time more scientific point of view will continue to look directly to Freud.

Books Received

Books received are acknowledged in this column, and such acknowledgment must be regarded as a sufficient return for the courtesy of the sender. Selections will be made for more extensive review in the interests of our readers and as space permits. Books listed in this department are not available for lending. Any information concerning them will be supplied on request.

PHARMACEUTICAL BOTANY. A Text Book of College Botany with Pharmaceutical and Medical Applications. Especially Adapted for the Use of Students of Pharmacy and Medicine and as a Reference for Pharmacists, Chemists and Students in Structural and Systematic Botany. By Heber W. Youngken, A.M., M.S., Ph.M., Professor of Botany, Pharmacognosy and Materia Medica in the Massachusetts College of Pharmacy. Fifth edition. Cloth. Price, $5 net. Pp. 692, with 387 illustrations. Philadelphia: P. Blakiston's Son & Company, 1927.

Latest edition of a pharmaceutical text.

HANDBUCH DER NORMALEN UND PATHOLOGISCHEN PHYSIOLOGIE, MIT BERÜCKSICHTIGUNG DER EXPERIMENTELLEN PHARMAKOLOGIE. Herausgegeben von A. Bethe, G. v. Bergmann und Anderen. Band. XIV. 1 Hälfte. Fortpflanzung. Entwicklung und Wachstum. 1 Teil. Fortpflanzung. Wachstum. Entwicklung. Regeneration und Wundheilung. Von A. Adler, A. Biedl, und Anderen. Paper. Price, 96 marks. Pp. 1193, with 440 illustrations. Berlin: Julius Springer, 1926.

New volume in colossal German system of physiology.

DIAGNOSIS AND TREATMENT OF DISEASES OF THE STOMACH WITH AN INTRODUCTION TO PRACTICAL GASTRO-ENTEROLOGY. By Martin E. Rehfuss, M.D., Assistant Professor of Medicine at Jefferson Medical College. Cloth. Price, $12. Pp. 1236 with 519 illustrations. Philadelphia: W. B. Saunders Company, 1927.

Complete survey of modern gastro-enterologic technic with reference to author's many original contributions.

NOXIOUS GASES AND THE PRINCIPLES OF RESPIRATION INFLUENCING THEIR ACTION. By Yandell Henderson and Howard W. Haggard. American Chemical Society Monograph Series. Cloth. Price, $4.50 net. Pp. 220, with illustrations. New York: Chemical Catalog Company, Inc., 1927.

Excellent monographic exposition of modern knowledge with author's original contributions.

NERVENSYSTEM UND SPONTANE BLUTUNGEN MIT BESONDERER BERÜCKSICHTIGUNG DER HYSTERISCHEN ECCHYMOSEN UND DER SYSTEMATIK DER HÄMORRHAGISCHEN DIATHESEN. Von Dr. Rudolf Schindler, Facharzt für innere Krankheiten in München, früherem Assistenten der Abteilung. Paper. Price, 4.20 marks. Pp. 68. Berlin: S. Karger, 1927.

Monograph on etiology and pathology of hysterical hemorrhages and ecchymoses.

ANGINA PECTORIS. The Anatomy, Physiology and Surgical Treatment. By Walter B. Coffey, M.D., F.A.C.S., Chief Surgeon, Southern Pacific Company; Philip King Brown, A.B., M.D., Medical Director, Southern Pacific Hospital, and John Davis Humber, B.S., M.D., Surgeon, Southern Pacific Company. Cloth. Price, $6.50. Pp. 393, with illustrations. New Orleans: A. J. Dickerson, 1927.

Monograph with case reports and exceptional illustrations.

THE MEDICAL DEPARTMENT OF THE UNITED STATES ARMY IN THE WORLD WAR. Volume II. Administration American Expeditionary Forces. By Colonel Joseph H. Ford, M.C. Prepared under the direction of Maj. Gen. M. W. Ireland, the Surgeon General. Cloth. Price, $3.40. Pp. 1123, with illustrations. Washington: Government Printing Office, 1927.

Tremendous volume dealing with administration of A. E. F.

WHOLESOME MARRIAGE. By Ernest R. Groves, Professor of Social Science at the University of North Carolina, and Gladys Hoagland Groves. Cloth. Price, $2. Pp. 239. Boston: Houghton Mifflin Company, 1927.

Good advice for the prospective bride and groom—and for mothers-in-law.

DER MESKALINRAUSCH. SEINE GESCHICHTE UND ERSCHEINUNGSWEISE. Von Privatdozent Dr. med. Kurt Beringer, Assistent an der psychiatrischen Klinik, Heidelberg. Paper. Price, 18 R. M. Pp. 315. Berlin: Julius Springer, 1927.

Monographic consideration of a new world type of poisoning.

OTTO HEUBNERS LEBENSCHRONIK. Von ihm selbst verfasst und mit seinem Willen nach seinem Tode. Herausgegeben von Wolfgang Heubner. Cloth. Price, 12.60 marks. Pp. 228, with 6 illustrations. Berlin: Julius Springer, 1927.

Beautifully prepared autobiography of a great German clinician.

THE ANATOMY OF THE NERVOUS SYSTEM FROM THE STANDPOINT OF DEVELOPMENT AND FUNCTION. By Stephen Walter Ranson, M.D., Ph.D., Professor of Neuroanatomy, Washington University School of Medicine. Price, $6.50 net. Pp. 425, with 284 illustrations. Philadelphia: W. B. Saunders Company, 1927.

New revised edition of standard neurologic textbook.

PRAKTIKUM DER HAUT- UND GESCHLECHSKRANKHEITEN FÜR STUDIERENDE UND ÄRTZE. Von Dr. Moriz Oppenheim, a. o. Professor für Dermatologie und Syphilis an der Universität in Wien. Fifth edition. Paper. Price, 12 marks. Pp. 284, with 55 illustrations. Leipsic: Franz Deuticke, 1927.

New edition of a small dermatologic manual.

INTRODUZIONE FISICO-CHIMICA ALLA BIOLOGIA. Por Dott. Gastone Lambertini. Paper. Price, 12 lire. Pp. 151, with 25 illustrations. Bologna: Licinio Cappelli, 1927.

FISIOPATOLOGIA DEI TIPI MORFOLOGICI COSTITUZIONALI. Studio statistico. Por Prof. Vincenzo Fici. Paper. Price, 6 lire. Pp. 59. Bologna: L. Cappelli, 1927.

PROCESSI DI TECNICA EMBRIOLOGICA ED ISTOLOGICA. Por Prof. Angelo Ruffni. Paper. Price, 10 lire. Pp. 105, with illustrations. Bologna: Licinio Cappelli, 1927.

THE ROCKEFELLER FOUNDATION, INTERNATIONAL HEALTH BOARD. Thirteenth Annual Report, 1926. Paper. Pp. 219, with illustrations. New York, 1927.

LAWS OF THE ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE. Paper. Pp. 20. London: Royal Society of Tropical Medicine and Hygiene, 1927.

TRANSACTIONS OF THE SECOND ANNUAL MEETING OF THE HAWAII TERRITORIAL MEDICAL ASSOCIATION. Paper. Pp. 101. Honolulu, 1927.

SOBRE ETIOLOGÍA DE LA TUBERCULOSIS Y DEL ARTRITISMO. Por el Dr. Aquileo Claramunt. Paper. Pp. 38. Montevideo, 1927.

LA XEROSTOMIA. Forme cliniche e patogenesi. Por Prof. Nino Samaja. Paper. Price, 5 lire. Pp. 40. Bologna: L. Cappelli, 1927.

I CAPILLARI NEL BAMBINO. Por Gino Frontali. Paper. Price, 12 lire. Pp. 88, with illustrations. Bologna: L. Cappelli, 1927.

Medicolegal

License Law—College of Four Years' Requirements

(Horton v. Clark et al. (Mo.), 293 S. W. R. 362)

The Supreme Court of Missouri, in affirming a judgment which dissolved a temporary restraining order obtained by the plaintiff and dismissed his bill wherein he sought to have the defendants, composing the state board of health, enjoined from conducting an inquiry for the revocation of his license to practice medicine and surgery, for alleged misrepresentations with reference to his premedical education and his attendance at a medical college, says that the power to revoke the license of one who is thereby authorized to practice medicine and surgery does not exist apart from the statute. In Missouri the statute is not only the sole source of the power to revoke but also prescribes and regulates exclusively the procedure to be followed in the exercise of the power. Looking, then, to the statute, the court finds no requirement that a proceeding to revoke a license to practice medicine shall be instituted by the filing of a verified complaint, or by the filing of any complaint or information whatever. Evidently it contemplates that the state board of health may act on any information, from whatever source and however communicated, which it may deem trustworthy. It is only necessary that the written notice provided for "contain an exact statement of the charges."

As disclosed by section 7332 of the revised statutes of 1919, as amended in 1921, an applicant, as a prerequisite to the taking of the examination for a license to practice medicine, must show at least that he is a graduate of an accredited high school or its equivalent. The state board of health cannot require more of him with reference to his premedical education. The only evidence receivable of the fact that he is a graduate is a certificate of graduation. Other evidence may be received, and no doubt is frequently necessary, to show that the certificate of graduation exhibited by an applicant was issued by an accredited high school or its equivalent. The length of time that the applicant attended the school issuing the certificate can be of no possible concern to the state board of health; provided, of course, that the certificate is genuine and was granted by a school coming within the class designated by the statute.

The statute requires as one of the preliminary qualifications for the practice of medicine that the applicant shall have received "a diploma from some medical college of four years' requirements." It was argued that attendance at a medical college for any specific length of time is not required, but the statute is plainly to the contrary. The movements that have been on foot for several years to raise the standards of attainment of practitioners of both law and medicine and the progress made therein are matters of common knowledge. In the light of that knowledge, the meaning of the qualifying phrase "of four years' requirements" seems to be unmistakable. As is well known, one can, by the process of "cramming," or by the aid of a skilful coach, successfully pass an examination on subjects of which he has no real knowledge. One of unusual endowment may, no doubt, be able to acquire the theory of medicine in much less time than four years, but that will not suffice to make him a competent practitioner. It requires time for the knowledge derived from textbooks and lectures to be organized and appropriated by the student in such fashion that he can make practical application of it. And the statute evidently contemplates that this process shall take place under the guidance and direction of competent instructors. This court thinks there can be no doubt, therefore, that by the words "medical college of four years' requirements" the legislature meant a college which requires its students, as a condition of graduation, to attend its sessions continuously and regularly for and during a full term of four years, barring, of course, reasonable vacation periods.

In the trial pending before the state board of health the burden was not on it, or the complainant, to prove that the medical college which granted the plaintiff a diploma was a college of four years' requirements. It was the plaintiff's duty to furnish evidence that it was a college of such requirements at the time he filed his application for a license. If he knowingly furnished false evidence for the purpose of deceiving the state board of health, and which did deceive it, that will be a sufficient ground under the statute for the revocation of his license.

Whether the right of a physician to practice his profession is a "property right," or simply a "valuable right," or merely a "privilege," the courts are not agreed. But, certainly, it is not an unqualified right. It is at all times subject to such restrictions as the legislature may impose in the exercise of the police power. The license granted confers on the licensee no right whatever in the way of a contract with the state. It merely furnishes immunity from punishment because of practice without a license. The power given to revoke licenses is essentially the same as the one to grant them. Judicial power is not required in the one instance; it cannot in reason be required in the other. The statute does not violate the "due process" provisions of the state and federal constitutions.

Change in Health of Applicant for Insurance

(Mickel v. Mutual Life Ins. Co. (Iowa), 213 N. W. R. 765)

The Supreme Court of Iowa says, in this action on a policy of life insurance, that the insured signed the application for insurance on December 2 and submitted himself to a medical examination by the medical examiner for the insurance company. The application was approved by the examiner. The policy was executed on the 11th, and on the 14th delivered by being left at the insured's place of business. Meanwhile, on the 6th, the insured became violently ill and the next day underwent an operation which disclosed a gangrenous condition and infection of the gallbladder. On the 9th, a second operation was performed, pneumonia developed later, and death resulted on the 22d. The application for insurance provided:

> The proposed policy shall not take effect unless and until the first premium shall have been paid during my continuance in good health, nor unless also the policy shall have been delivered to and received by me during my continuance in good health.

To meet the defense that the policy never became effective because it was not delivered to, nor received by, the insured during his continuance in good health, the plaintiff relied on section 1812 of the Iowa code of 1897, being section 8770 of the present code, which reads:

> In any case where the medical examiner, or physician acting as such, of any life insurance company or association doing business in the state shall issue a certificate of health or declare the applicant a fit subject for insurance, or so report to the company or association or its agent under the rules and regulations of such company or association, it shall be thereby estopped from setting up in defense of the action on such policy or certificate that the assured was not in the condition of health required by the policy at the time the issuance or delivery thereof, unless the same was procured by or through the fraud or deceit of the assured.

The precise question thus presented has apparently never been passed on by this court in any previous case, the question being, Does the estoppel created by the statute preclude the insurer from setting up the provisions of the application quoted above, the fatal illness having been contracted subsequent to the date of the medical examination and the report thereof to the company of the examining physician and prior to the delivery of the policy to the insured? But for the statute the terms of the application might be pleaded by the company as a defense. At the close of the evidence both parties moved for a directed verdict. The motion of the defendant was sustained, the court directing a verdict for the plaintiff for the amount only of the single premium paid to the company, which is here reversed, the supreme court holding that the motion of the plaintiff for a directed verdict should have been sustained.

Two applicable and obvious legal rules may be briefly stated as follows: 1. The legislature may, by proper enactment, make the report or certificate of the company's medical examiner to the effect that the applicant is a fit subject for insurance conclusive, and may deny the company the right to set up ill health on the part of the insured as a defense

existing at the time of such medical examination and the issuance of the policy, or at the time of the delivery thereof to the insured, notwithstanding the illness may have arisen prior or subsequent to the medical examination and the report of the examiner to the company. 2. An insurance company may not contract with an applicant for insurance in disregard of such enactment and bind him thereto.

The provisions of the application relied on as a defense in this case are not, per se (in and of themselves), invalid under section 8770; but, if the statute is applicable where the illness arose wholly subsequent to the date of the medical examination and report of the medical examiner, then they cease to be effective immediately on the delivery of the policy and the acceptance thereof by the insured. It follows that an insurance company has a right to contract with an applicant that the policy shall not go into effect until delivery thereof to such applicant while he is in good health, but such provision is for the sole benefit of the insurer and gives to it the option to refuse to deliver the policy to the applicant, if he is not at the time in good health. In other words, the insurer has the option of withholding the policy, in which event it would not go into effect, or of delivering it to the insured. If it accepts the latter alternative, the policy goes into effect at once, and the bar of the statute precludes the insurer from setting up the contract as a defense in an action thereon. The means of ascertaining the physical condition of the insured in this case were readily at hand on December 14 when the policy was left at his place of business for him. The delivery of the policy brought it under the operation of section 8770, which in terms barred the company from predicating a defense on the condition of health of the insured "at the time of the issuance or delivery thereof."

Permitted Exhibitions of Person to Jury

(Sullivan v. Minneapolis, St. P. & S. S. M. Ry. Co. (N. D.), 213 N. W. R. 841)

The Supreme Court of North Dakota says, in this action to recover damages for personal injuries where one of the contentions of the defendant was that the plaintiff's condition was due to syphilis rather than to the injuries which he had received, that there was a scar on his penis like that found in cases of hard chancre caused by syphilis, according to the testimony of a physician, whereas the plaintiff denied that it was a syphilitic scar. Permitting the plaintiff to exhibit his person to the jury in a separate room for the purpose of having them view the scar, the defendant contended was error, but the court holds otherwise. The scar had assumed some importance. There was considerable testimony in which the matter was gone into with more or less detail. At least one physician drew an outline of it, which was an exhibit in the case. Of course the scar itself afforded the best evidence of its own appearance. It was real evidence. However much of indecency might be involved in the exhibition in the present case, this court is not prepared to say that it went beyond the legitimate bounds for placing before the jury the actual facts in the case. No person of the opposite sex was directly involved or interested in this case. The principal defense made with regard to the plaintiff's injuries naturally opened up an unsavory line of investigation. This court is not prepared to say that the discretion to stop it short of an exploration into needless indecency was abused. Furthermore, after the plaintiff had on cross-examination been asked substantially what he had been treated for in France, and it having been made to appear that he was treated by a physician, this cross-examination practically placing before the jury the diagnosis of the French physician, the court thinks that it could hardly be said that it was prejudicial to permit the plaintiff to repeat on redirect examination the diagnosis of the physician as saying that the little sore that he treated him for was a soft chancre. Nor does the court think that prejudicial error was committed in permitting the plaintiff, with the aid of his counsel, to demonstrate in the presence of the jury an alleged ankle clonus or trembling of the foot when pressure was applied in a certain manner. The subject of ankle clonus was pretty well exhausted in the examination of the various physicians, and the demonstration could have done little more than clarify the testimony.

Incompetent Evidence of Roentgen-Ray Specialist

(Gastiger v. Horowitz (N. Y.), 221 N. Y. Supp. 481)

The Supreme Court of New York, appellate division, second department, in affirming a judgment in favor of the plaintiff for $3,000 damages for negligent injury, says it agrees with the defendant that there was error in allowing a roentgen-ray specialist to testify from his notes concerning a roentgenogram examined by him while the plaintiff was at the hospital. Of course, the physician should not have been allowed to testify to the result of his examination of the plate. He made no claim that he took the roentgenogram, or had ever seen the plaintiff. The plate was not produced; its absence was not satisfactorily accounted for. The persons who took the roentgenogram were not called. The witness said that the plate which he examined had on it the name of the plaintiff and a number; he examined it and made notes of his examination, and, over the defendant's objection and exception, he was allowed to tell what the roentgenogram showed, and the defendant's motion to strike out the evidence was denied. This was all wrong. But all that the physician's evidence amounted to was that this unidentified roentgen-ray plate showed a broken arm. There was no dispute on the evidence that the plaintiff's arm was broken. The fact was established by competent testimony from physicians who examined the plaintiff. The court can see no good reason for reversing the judgment because of the error in admitting the incompetent evidence of the roentgen-ray expert.

Providing for Horse Not Evidence of Unsound Mind

(Lewis v. Bullock (Ky.), 292 S. W. R. 508)

The Court of Appeals of Kentucky does not agree with the contention that where part of the consideration expressed in a deed to 55 acres of land was the "good treatment and care of one black horse named 'Dick,' until the death of said horse," that was proof that the mind of the grantor was unbalanced when he executed the deed. The court says, among other things, that some men do not love dumb animals. They do not return the affection shown them by the horse or the dog; while some men passionately love such animals, and will protect them even at the risk of their own lives. They, as it were, are the sons of the Great Spirit who see the same God-given life in the dumb animals as they feel within themselves. The greatest of earth, so history records, have been devoted to the horse. Was Alexander crazy because he loved his horse? Or Lee, or Sheridan? Was Shakespeare crazy because he lent his scintillating genius to the praise of the horse? Or Cervantes, or Hugo, or Scott? If they were not, and there is none to say they were, why should we conclude that the old stonecutter, Charles H. Lewis, a humble citizen of the hills in Kentucky, was crazy because he desired to provide for the good treatment of his horse named 'Dick,' and that his horse should receive gentleness and kindness in his declining days as he passed toward the Valley of the Shadow?

Society Proceedings

COMING MEETINGS

American Association of Railway Surgeons, Chicago, November 2-4. Dr. Louis J. Mitchell, 29 East Madison Street, Chicago, Secretary.

American College of Physical Therapy, Chicago, October 31-November 5. Dr. R. W. Fouts, City National Bank Building, Omaha, Secretary.

Association of American Medical Colleges, Montreal, October 24-26. Dr. F. C. Zapffe, 25 East Washington Street, Chicago, Secretary.

Ohio Valley Medical Association, Evansville, Ind., November 9-10. Dr. J. F. Wynn, 712 South 4th Street, Evansville, Ind., Secretary.

Philippine Islands Medical Association, Manila, December 14-17. Dr. A. S. Fernando, College of Medicine, University of the Philippines, Manila, Secretary.

Radiological Society of North America, New Orleans, November 28-December 2. Dr. Robert J May, 5005 Euclid Avenue, Cleveland, Secretary.

Southern Medical Association, Memphis, Tenn., November 14-17. Mr. C. P. Loranz, Empire Building, Birmingham, Ala., Secretary.

Southern Surgical Association, Augusta, Ga., December 13-15. Dr. R. L. Payne, Medical Arts Building, Norfolk, Va., Secretary.

Western Surgical Association, Omaha, December 8-9. Dr. Harry P. Ritchie, Lowry Building, St. Paul, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in America for a period of three days. No foreign journals are available prior to 1921, nor domestic prior to 1923. Periodicals published by the American Medical Association are not available for lending, but may be supplied on order. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested).

Titles marked with an asterisk (*) are abstracted below.

American J. Diseases of Children, Chicago

34: 159-326 (Aug.) 1927

*Effect of Therapeutic Doses of Ultraviolet Radiation on Basal Metabolism in Children. M. E. Fries, New York.—p. 159.
*Id.: Immediate Effect. M. E. Fries and A. Topper, New York.—p. 166.
*Enlargement of Spleen in Children. A. Bleyer, St. Louis.—p. 176.
*Pyloric Stenosis of Infants. F. F. Tisdall, M. W. Poole and A. Brown, Toronto.—p. 180.
*Inorganic Blood Phosphate: Rachitic and Nonrachitic Diets. E. M. Koch and M. H. Cahan, Chicago.—p. 187.
*Papilledema and Diagnosis of Epidemic Encephalitis. L. Rosenberg, New York.—p. 198.
*Hiccups Among Infants. W. R. Pendleton, Long Beach, Calif.—p. 207.
Pubescent Growth; Periodic Gain. B. S. Veeder and E. H. Rohlfing, St. Louis.—p. 211.
*Metabolism of Salts in Nephritis: III. Chlorides and Sodium. G. L. Boyd, A. M. Courtney and I. F. MacLachlan, Toronto.—p. 218.
Renal Infantilism. F. C. Hunt, New York.—p. 234.
*Chronic Intussusception: with Prolapse. O. B. Markey, Cleveland, and K. Kato, Los Angeles.—p. 249.
Diphtheria in Infancy. S. F. Ravenel, Greensboro, N. C.—p. 258.

Effect of Ultraviolet Radiation on Basal Metabolism.—Five children were treated by Fries with ultraviolet radiations three times a week. Determinations of basal metabolism were made from twenty to seventy hours following treatment. The basal metabolic determinations did not vary more than 10 per cent, except in the second series of treatment in an ambulatory case. As not all conditions could be controlled in the ambulatory cases, the decline that occurred in this case cannot be attributed solely to the ultraviolet radiations.

Id.—Five children were treated by Fries and Topper with ultraviolet radiations three times a week, the length of exposure being gradually increased from three minutes to fifteen minutes. Determinations of basal metabolism were made preceding and immediately following irradiations, and again one, two and six hours later. The basal metabolism preceding and following irradiation usually did not vary more than 10 per cent. In all cases in which the increase was greater than 10 per cent, there was a disturbing environmental factor which, in itself, could have explained the increase. The blood pressure and the pulse rate remained practically constant throughout.

Enlarged Spleen in Measles.—In three groups of cases of measles, comprising more than 500 cases, Bleyer found that the spleen was enlarged in 56 per cent. The appearance of the spleen at the height of the rash and its abrupt disappearance indicate that this reaction is related to the virus of this disease. No such reaction as was observed in measles occurred in the other common diseases of children.

Pyloric Stenosis of Infants.—The frequency with which each of the four cardial symptoms and signs was encountered in 120 cases is presented by Tisdall et al. In every instance the Rammstedt operation was performed, with a mortality for the whole series of 13.2 per cent. The diagnosis of pyloric stenosis was confirmed in every instance at operation. Visible gastric peristalsis was noted in ninety-six cases; projectile vomiting was present in 113 cases; pyloric tumor was palpable in 111 cases; constipation was present in 105 cases.

Inorganic Blood Phosphate.—The results of the study made by Koch and Cahan indicate that while cod liver oil raises the blood phosphate to approximately normal, and direct irradiation of the animal and feeding of irradiated cholesterol have some influence in raising blood phosphate, it is still possible to obtain a low phosphate value and a low product of phosphorus × calcium in an animal which, so far as roentgenograms and histologic examination can demonstrate, shows a perfect calcification of the bones.

Papilledema in Epidemic Encephalitis.—Two cases are reported by Rosenberg which presented all the features of epidemic encephalitis, plus papilledema, and which were diagnosed as such. They proved on operation, however, to be neoplasms of the brain.

Hiccups Among Infants.—The work done by Pendleton seems to confirm the hypothesis that certain types of hiccups may be stopped by removing the source of esophageal irritation. The irritant in hiccups occurring after nursing was taken to be partially regurgitated gastric contents lying in the esophagus. The treatment was the administration of fluids rapidly by mouth and in such an amount as would clear the esophagus. When an average of 6.7 cc. of water or complementary feeding mixture was used and an average of thirty seconds taken for consumption, 57.5 per cent of forty infants stopped hiccuping immediately, and 15 per cent stopped fairly readily. In none of the infants who had responded satisfactorily to treatment was the attack resumed. In general, there seemed to be little probability that an attack of hiccups which occurred after nursing had been stopped for fifteen seconds would recur. Nine infants sucking nipples on empty bottles showed poor therapeutic results—the hiccups stopping under treatment in only 22 per cent and being made worse generally when the attacks were not stopped. Thus, the use of fluids seems essential for satisfactory results.

Plasma Chlorides in Nephritis.—The plasma chlorides were estimated by Boyd et al. in sixty-eight cases of all types of nephritis: fifty-two cases of acute glomerular nephritis; nine cases of chronic azotemic nephritis, and three cases of chronic parenchymatous nephritis. The chlorides were found to be normal in forty-one cases, or in 46 per cent of these. Little difference was noted in the blood concentration in those cases in which the edema was a part of an acute illness and those in which it was more or less constantly present over long periods. At most, it may be said that hydremia is found more frequently in the chronic cases. Other data are also given.

Incidence of Intussusception.—In approximately 31,000 patients admitted to a children's hospital during four years, less than 0.1 per cent, or thirty cases, were diagnosed as intussusception. Of these, only one case, which is reported by Markey and Kato, showed a prolapse.

American Journal of Physiology, Baltimore

81: 519-796 (Aug.) 1927

I. Effect of Parathyroid Hormone on Gastric Secretion. II. Calcium Content of Gastric Juice. W. C. Austin and S. A. Matthews, Chicago.—p. 552.
*Effect of Cobalt on Insulin Hypoglycemia in Rabbits. N. R. Blatherwick and M. Sahyun, Santa Barbara, Calif.—p. 560.
*Regulation of Respiration: IX. Relation of Tissue Acidity and Blood Acidity to Volume-Flow of Blood as Illustrated by Hemorrhage and Reinjection. A. B. Hertzman and R. Gesell, Ann Arbor, Mich.—p. 563.
Response of Circular and Longitudinal Muscle of Rabbits' Ileum to Physical and Mechanical Conditions. B. Šiaulis and T. Sollmann, Cleveland.—p. 579.
Progressive Changes in Excitability and Tone of Excised Intestines (Magnus Method) and Their Influence on Response to Peptone. B. Šiaulis and T. Sollmann, Cleveland.—p. 606.
*Prevention of Tetany by Oral Administration of Ammonium Chloride. W. F. Wenner, New Haven, Conn.—p. 612.
Semiovariectomy; Compensatory Hypertrophy of Remaining Ovary. J. R. Slonaker, San Francisco.—p. 620.
Rôle of Tissues in Maintaining Acid-Base Equilibrium of Blood: I. Isolated Muscle Tissue. L. N. Katz and M. G. Banus, Cleveland.—p. 628.
Id.: II. Effect of Hind-Leg Preparation. M. G. Banus and L. N. Katz, Cleveland.—p. 644.
*Effect of Circulation in Man of Rebreathing Different Concentrations of Carbon Dioxide. J. D. Goldstein and E. L. Du Bois, New York.—p. 650.
*Attempts to Increase Experimentally Hormone Output by Thyroid Gland. L. Hektoen, A. J. Carlson and K. Schulhof, Chicago.—p. 661.
Vasomotor Fibers in Retinal, Choroidal and Ciliary Arteries. S. J. Cohen and L. Bothman, Chicago.—p. 665.
Tetanic Nature of Knee-Jerk Response in Man. L. E. Travis, W. W. Tuttle and T. A. Hunter, Iowa City.—p. 670.
Gastric Digestion: Relation of Volume, Hydrogen Ion Concentration and Buffer Capacity of Test Meal to Gastric Contents. W. A. Standish, G. R. Cowgill and A. T. Shohl, New Haven, Conn.—p. 696.
Hiccups of Pharyngo-Esophageal Origin. W. R. Pendleton, Chicago.—p. 707.
*Kidney Function: I. Renal Excretion with Special Reference to Ambard's Laws. B. S. Walker and A. W. Rowe, Boston.—p. 738.

Id.: II. Relation of Blood to Urine Urea. B. S. Walker and A. W. Rowe, Boston.—p. 755.
First Secondary Change in Pulse Rate Following Very Brief Violent Exercise. F. Klyver, Jr., J. Huang and G. D. Shafer, San Francisco. —p. 765.
Spectrophotometric Determinations of Purified Bilirubin. C. Sheard, F. C. Mann and J. L. Bollman, Rochester, Minn.—p. 774.

Effect of Cobalt on Insulin Hypoglycemia.—The experimental observations of Blatherwick and Sahyun indicate that cobalt is without appreciable influence on the insulin hypoglycemia in rabbits.

Relation of Tissue Acidity and Blood Acidity to Volume Flow of Blood.—The results of experiments reported on by Hertzman and Gesell agree with the common inverse relation between acidity of the arterial blood and respiratory movements. The relation between acidity of the venous blood and pulmonary ventilation was more direct. The observations reported support the view of the importance of acidity in the control of pulmonary ventilation but they do not necessarily preclude other effects of altered oxidations.

Prevention of Tetany by Ammonium Chloride.—Ammonium chloride administered orally, Wenner found, was efficacious in the prevention of tetany in parathyroidectomized dogs. Dogs in violent tetany recover within one and one-half hours after receiving from 100 to 200 cc. of a 5 per cent solution of ammonium chloride. Thyroparathyroidectomized dogs receiving daily administrations of ammonium chloride for from thirty to forty days become readjusted to the loss of the parathyroids and may be placed on a meat diet without ill effects. It is suggested that ammonium chloride probably exerts its action by rendering the blood more acid, thereby producing a rise in the serum calcium and a disappearance of the symptoms of tetany.

Effect of Carbon Dioxide on Circulation.—Measurements were taken by Goldstein and Du Bois of the systolic and diastolic blood pressures, the heart rate, the alveolar carbon dioxide tension, and the respiratory rate and amplitude, while the subject was rebreathing different concentrations of carbon dioxide. The increase in the systolic blood pressure occurred in three definite stages; the duration of each stage could be regulated by changes in the carbon dioxide concentration of the rebreathing mixture. The systolic pressure, the diastolic pressure and the heart rate showed a characteristic relationship to the changes in the alveolar carbon dioxide tension. During the recovery period, the systolic pressure gradually fell to the normal level, while the diastolic pressure fell very markedly immediately after the subject was allowed to breathe room air and then just as suddenly rose. This transient effect took place within the first minute after the rebreathing period had ended.

Increasing Hormone Output by Thyroid.—In dogs under barbital anesthesia and with the cervical sympathetic nerves severed, Hektoen et al. noted that there are considerable spontaneous variations in the concentration of thyroglobulin in the blood of the thyroid veins as determined by the precipitin method. These variations appear not only in different dogs but also in the blood from the two thyroid lobes of the same dog, and in the blood from the same lobe during the course of a single experiment. In experiments on nine dogs the sympathetic nerve stimulation, direct thyroid massage and intravenous epinephrine and pilocarpine failed to increase the thyroglobulin in the blood of the thyroid vein above that of the variations in the controls. In one experiment stimulation of the nerves to the thyroid was followed by an increase in the thyroglobulin concentration greater than in the controls. This may be due either to increased rate of thyroid secretion or to decreased blood flow through the gland.

Kidney Function.—The several so-called laws of kidney excretion are discussed by Walker and Rowe and their mathematical formulation analyzed. Experiments have been carried out on normal and nephritic subjects to ascertain the degree of validity of these several concepts. The first law of Ambard is found to be correct only within certain rather narrow limits. At best, it may be regarded only as a rough approximation. The second law of Ambard has been found to be completely invalid, thereby confirming the conclusions of earlier investigators. The third law of Ambard—a combination of the first two—in spite of its highly dubious foundation, is shown to offer results which correlate approximately with the known conditions of renal function.

Archives of Internal Medicine, Chicago

40: 129-252 (Aug.) 1927

*Calcium Studies in Jaundice: Effect of Parathyroid Extract on Distribution of Calcium. A. Cantarow, S. M. Dodek and B. Gordon, Philadelphia.—p. 129.
*Storage of Water by Body Tissues. H. Skelton, Little Rock, Ark.—p. 140.
*Relative Hyptension of Foreigners in China. C. L. Tung, Peking.—p. 153.
*Diseases of Liver: VI. Comparative Study of Tests for Function in Cirrhosis. C. H. Greene, C. S. McVicar, A. M. Snell and L. G. Rowntree, Rochester, Minn.—p. 159.
*Blood Sugar Curves Following Ingestion and Intravenous Injection of Glucose. W. G. Lennox and M. Bellinger, Boston.—p. 182.
*Blood Bilirubin. F. S. Perkin, Ann Arbor, Mich.—p. 195.
*Pernicious Anemia and Tropical Sprue. E. A. Baumgartner and G. D. Smith, Clifton Springs, N. Y.—p. 203.
*Hypoglcemia and Toxic Effects of Insulin. G. A. Harrop, Jr., Baltimore. —p. 216.
*Spectrophotometric Determination of Hemoglobin. G. E. Davis and C. Sheard, Rochester, Minn.—p. 226.
*Effect of Exercise on Respiratory Exchange in Heart Disease: II. J. M. H. Campbell and F. J. Sale, London.—p. 237.

Effect of Parathyroid Extract on Distribution of Calcium.—Cantarow et al. report on an investigation undertaken to compare the response to parathyroid extract in fourteen cases of jaundice; one was hemolytic in type, three were cases of hepatitis due to arsphenamine and ten were of an obstructive nature, resulting from either gallstones or carcinoma of the head of the pancreas; and six control cases. In jaundice it is evident that a functional deficiency in calcium exists, probably resulting from the increased amount of bile pigments in the blood and tissues. The calcium content of whole blood, plasma and serum and the coagulation time were determined at three hour intervals after the injection of parathyroid extract. The serum calcium values varied slightly, ranging from 9.3 to 12 mg. per hundred cubic centimeters in jaundice. There was an extremely wide variation, however, in the calcium content of whole blood, the figures ranging between 4.8 and 12 mg. per hundred cubic centimeters. Twelve hours after the administration of the parathyroid hormone the variation in the whole blood calcium of jaundiced and nonjaundiced patients was practically identical. Parathyroid extract acts as a mobilizer of calcium; in jaundice it tends to restore the normal distribution and functional availability of this element. The favorable effect of the hormone on the tendency of jaundiced tissue to bleed is due largely to the increased coagulability of the blood and probably to the diminished permeability of the capillary walls, the result of an increase in functioning calcium.

Storage of Water by Body Tissues.—Skelton states that approximately half of the body water is in the muscles. The skin contains about one fifth of the water in the body, and the blood about 7 per cent. Of the water in the blood, 67 per cent is in the plasma and 33 per cent is in the corpuscles. All the tissues lost water after hemorrhage. Following the injection of isotonic and hypertonic sodium chloride solutions, tissues, except muscles, showed an increase in their water content. Following the injection of 1.2 per cent calcium chloride solutions, the muscle and skin showed a decrease in their water content. The results after the injection of 2.4 per cent calcium chloride were parallel to those after hemorrhage. Although the muscle contains nearly one half of the body water, and loses the least per unit mass of tissue, it gives up more fluid than any other tissue when the animal is deprived of fluid, and takes up by far the greatest portion of any water added as water per se or as a hypotonic salt solution. It would seem justifiable, therefore, to indicate muscle as the most important water reserve of the body; it stores the greatest quantity of any excess, and acts as a safeguard against the loss of too much water from the body. The liver and the intestine appear to respond more quickly than any other tissues when there is an alteration in the water content of the body.

Relative Hypotension of Foreigners in China.—An analysis made by Tung of parallel records of the systolic and the diastolic blood pressure of fifty-eight Americans at home and

in Peking about three years later shows an increase of systolic pressure in 15 per cent of the subjects, no change in 21 per cent, and a decrease in 64 per cent. The diastolic pressure shows an increase in 12 per cent, no change in 16 per cent, and a decrease in 72 per cent. The average systolic pressure of fifty-eight Americans in America is 118 mm. of mercury, and in China 109. The average diastolic pressure in America is 76, while it is only 65 in Peking. Thus, there is an average decrease of 9 mm. in systolic pressure in Peking and an average decrease of 11 mm. in diastolic pressure.

Liver Function in Cirrhosis.—Greene et al. assert that the condition termed cirrhosis of the liver is an end-result of chronic inflammatory, degenerative and proliferative changes that may be produced by a variety of disease processes. The determination of the concentration of bilirubin in the serum and of the retention of phenoltetrachlorphthalein promises to be of assistance in the clinical study of such cases. The other tests of hepatic function studied have served to emphasize the importance of the great functional reserve of the liver. They failed, however, to show significant or sufficiently specific changes to make them of any great clinical value. The phenoltetrachlorphthalein test is of particular value in the diagnosis and study of cases of portal cirrhosis with ascites. While jaundice is not a striking manifestation in portal cirrhosis, the study of the serum bilirubin showed the presence of latent icterus in several instances. The study of the serum bilirubin has been of particular value in determining the degree of retention of bile in all types of biliary cirrhosis.

Effect of Dextrose on Blood Sugar Curves.—Lennox and Bellinger plotted the blood sugar curves of 100 nondiabetic subjects following the administration of dextrose by mouth and intravenously. Of 115 curves, drawn by both methods, which could be plotted against one another, there was a normal degree of correlation in approximately 75 per cent. The average curves of twenty-two subjects on whom repeated tests were made by both methods showed normal correlation in 87 per cent. When dextrose was injected, glycosuria was more frequent and more pronounced than when dextrose was ingested, and bore little relationship to the concentration of sugar in the blood.

Blood Bilirubin.—Perkin believes a study of the blood bilirubin to be of considerable value in patients receiving arsenic preparations as giving the earliest possible indication of injury to the liver. In cases of disease of the liver, important information is often given, but the type of reaction must not be entirely relied on as a means of diagnosis. Characteristically, there is no discernible effect in cases of cholecystitis and cholelithiasis without obstruction, twenty cases giving results which were within normal range, with one exception. The bilirubin is a valuable adjunct to the diagnosis and prognosis in diseases of the blood and blood-forming organs.

Pernicious Anemia and Tropical Sprue.—In fifteen cases of sprue, Baumgartner and Smith found five patients with achlorhydria and with an anemia similar to that of pernicious anemia—high color index—but possibly with less marked changes in the red cells, certainly fewer nucleated red cells. Three of the patients have had clinical evidences of tetany and a low blood calcium, an observation not yet described in pernicious anemia. None of the patients have had any evidence of degeneration of the posterior column while under observation, although several have had the marked numbness and tingling so frequent in pernicious anemia; while in fourteen of the fifteen *Monilia* has been grown from the stools, and this has occurred only four times in seventeen cases of pernicious anemia. The authors do not believe, as Christian suggests, that sprue is late pernicious anemia or the reverse, or that even in late cases of sprue achylia necessarily develops.

Toxic Effects of Insulin.—The cases reported by Harrop indicate that unconsciousness due to insulin overdose may supervene with great rapidity, often without warning, in sleep, and with few or negligible prodromes. They also indicate that there is not always a set progression of symptoms, such as is usually described. Not always do subjective symptoms of uneasiness or weakness or hunger precede more pronounced symptoms of pallor or flushing or sweating, in their turn preceding convulsions and unconsciousness. Generalized convulsions are exceptional in adults, although muscular twitchings, especially of the facial muscles and of the muscles of the extremities, are common. The administration of carbohydrate to unconscious persons in insulin reactions does not always have an immediate prompt effect. The degree of hypoglycemia does not accurately determine the severity of the reaction, nor does the administration of sugar always relieve it. It is probable that the toxic effects may be due partly, or in certain cases entirely, to some other action of insulin.

Spectrophotometric Determination of Hemoglobin.—Davis and Sheard conclude from their investigations that the spectrophotometric method of estimating hemoglobin is not only highly accurate, but also simple and fairly rapid as well. It should prove useful in diagnosis, in work of standardization and in research. A simple and inexpensive form of spectrophotometer, using a color filter and a neutral density wedge, has been tried out and found capable of giving fairly accurate results.

Effect of Exercise on Respiratory Exchange in Heart Disease.—The effect of exercise—roughly equivalent to slow and ordinary walking—has been observed by Campbell and Sale in three patients with heart disease. The metabolism relative to the subject's weight did not vary greatly from the normal, which shows that the capacity for increasing ventilation and circulation, rather than any change in the metabolism or total ventilation required, limits exertion. Throughout the range examined, both of these increased regularly with the work done, so that their relationship could be shown graphically by a straight line. In these patients the extra oxygen intake as the result of work was only slightly higher than normal. As the exercise became harder, the percentage of the extra oxygen required, which had to be obtained at the end of the exertion, increased more in the patients. Both these differences would tend to produce breathlessness, but the degree of change would not have been sufficient to do so in a normal subject. Greater differences were noted in the elimination of carbon dioxide. The percentage of carbon dioxide in the expired air tended to be low, probably because overventilation was needed to compensate for defective circulation. The rate and depth of breathing varied in type. The rapid, shallow breathing is itself a further cause of breathlessness.

Bull. Association of American Med. Colleges, Chicago

2: 289-384 (Oct.) 1927

*Experiment with Preceptor System. W. J. Kerr, San Francisco.—p. 289.
*Studying Medicine in Sweden—Comparison with Our American System. H. Berglund, Minneapolis.—p. 292.
*Periodic Health Examinations Among Medical Students. E. B. Heck, New York.—p. 296.
*Pre-War Medical Education in Austria. K. Schulhof, Chicago.—p. 305.
*Proposed New Curriculum. F. C. Zapffe, Chicago.—p. 322.

Experiment with Preceptor System.—The prescribed curriculum at the University of California Medical School is completed in three and one-half years. The remaining four months of the fourth year are devoted to elective courses, two months of which must be taken in a major department. For the past two years a few selected students have been permitted to spend a month with an alumnus in general practice. The alumni have been chosen with great care, with due regard to ethics, general ability, and standing in the community. The student journeys to the appointed place and apprentices himself to the doctor, taking part in his daily activities and observing the methods of conducting practice in its various phases.

Studying Medicine in Sweden.—Berglund believes that there is a definite value in any arrangement that makes it possible for the young man or woman who intends to train for the medical profession to enter on medical studies earlier than is now being done. How much importance is to be ascribed to the arrangement of courses or to the methods of teaching? Perhaps, their chief value is to be found in the selection and shifting of the student material. If this is the case, might the shifting not be most effectively accomplished by a system like the European, that leaves the whole responsibility for progress or failure with the student himself.

Periodic Health Examinations of Medical Students.—A student health service has been in operation at the Columbia University College of Physicians and Surgeons for the past three years which has sought, by means of an annual physical examination, to ascertain the health status of the medical student with the view toward helping him to keep himself physically fit; to attempt to evaluate the importance of symptoms and physical signs in the hope that early indications of disease may be recognized and promptly treated, and to provide a model physical examination for the student in the hope that he will thereby be better qualified to practice it himself in later years, a requirement that will surely be demanded of the practitioner of the future.

Medical Education in Austria.—Schulhof discusses medical education in Prague from the standpoint of one who is a product of it, and at the same time a keen observer. Furthermore, being closely connected with the subject in this country, he is competent to make comparisons. His article is too "meaty" to be abstracted—but in closing, he says: "I almost wonder why it is that the results are about the same in the old country and here, namely, a varying amount of creative work and an abundance of 'Sitzschwielentätigkeit' done by the faculties and an output of a few excellent physicians, a considerable number of good ones and a reasonable percentage of failures. This, in spite of the fact that the selection of students is ruled there only by their personal inclinations—not by previous scholarships or arbitrary selection by the medical school; in spite of the ease with which lectures can be dodged; in spite of the fact that the budgets are insufficient and that there is still some of the old tendency to educate at the university for postgraduate training rather than to train directly for the profession. Probably the deficiencies of the old country medical schools are balanced by the better preliminary training and abundance of prolonged practical postgraduate experience."

Proposed New Medical Education.—Zapffe advocates reducing the number of "required" hours to the lowest possible minimum, providing for a fair number of so-called "required elective" hours, and revising courses and teaching methods so that the student is given the "leads" for acquiring knowledge, rather than information that is contained in textbooks, combining as much as possible the teaching in many subjects, and continuing teaching in virtually all subjects throughout all the years of the curriculum; that is, once teaching in any subject is begun, no matter in what year, it should be continued, either directly or indirectly, either by particular instruction in a subject, with reference to that subject only, or by correlated instruction with other subjects of which it is an integral part. Thus credits will be given at the end of the fourth year only. The incompetents will have been weeded out long before then. In fact, there should not be any failures after the second semester. Early contact with the clinical side of medicine and maintaining continuous contact with the scientific side until the end of the final year, is urged. A working curriculum is presented.

Canadian Med. Assoc. Journal, Montreal

17: 767-880 (July) 1927

Then and Now. F. N. G. Starr, Toronto.—p. 767.
Postnatal Care. B. P. Watson, New York.—p. 773.
*Relationship Between Scarlet Fever and Chronic Nephritis. D. G. Campbell, Montreal.—p. 779.
Asthma. H. K. Detweiler, Toronto.—p. 783.
Tryparsamide in General Paresis. G. H. Stevenson, London, Ont.—p. 787.
*Infective Coronary Thrombosis. G. Harcourt, Powassan, Ont., and A. S. Moorhead and N. B. Gwyn, Toronto.—p. 790.
Stereograms of Chest. A. H. W. Caulfeild and G. E. Richards, Toronto —p. 794.
*Secondary Carcinoma Implanted on Endocardium of Right Ventricle. A. G. Nicholls, Halifax, N. S.—p. 798.
Diphtheria Immunization with Diphtheria Toxoid (Anatoxin-Ramon). M. W. Bloomberg and A. G. Fleming, Montreal.—p. 801.
Nux Vomica. H. M. Lancaster and A. L. Davidson, Ottawa.—p. 803.
Abdominal Examination at Term. K. C. McIlwraith, Toronto.—p. 808.
Medical Credulity and Proprietary Medicines. M. I. Sparks, Toronto.—p. 810.
*Torsion of Whole Mesentery in Infant. O. W. Niemeier, Hamilton, Ont. —p. 811.
*Convalescent Serum in Whooping Cough. H. P. Wright, Montreal.—p. 813.
Young Human Abortus. R. J. Bean, Halifax, N. S.—p. 815.
Electrotherapy. J. Hunter, Toronto.—p. 818.
Coronary Thrombosis with Pericarditis and Heart Block as Early Complication in Influenzal (?) Pneumonia. J. E. Elliott, Toronto.—p. 820.
Nonerupted and Aberrant Third Lower Molar Tooth. S. H. Corrigan, Lampman, Sask.—p. 821.
Cirrhoses of Liver. E. S. Mills, Montreal.—p. 823.

Relationship Between Scarlet Fever and Chronic Nephritis.—An analysis made by Campbell shows that the incidence of acute nephritis in scarlet fever in Montreal during the past twenty years, as well as in the Metropolitan Asylums Board area of London, England, has not been anything like what it is usually considered to be and is in fact less than 3 per cent. In a study of more than 10,000 cases of scarlet fever it has become evident that, of the very few who developed nephritis, almost all responded rapidly when properly treated from the onset, and left the hospital without any clinical evidence of kidney involvement. A statistical study based on the records of the Montreal General Hospital and Montreal Maternity Hospital shows that the incidence of chronic nephritis in cases presenting a history of scarlet fever is little greater than is in accord with the law of averages. On the other hand, it is strikingly evident that a history of scarlet fever is very frequently obtained without any evidence of kidney injury many years later.

Infective Coronary Thrombosis.—The interesting feature in the case cited by Harcourt et al. was multiple vein involvement in a thrombotic process, which included the splenic vein and produced a large splenic tumor. In addition to these complications was the syndrome of blocking of the coronaries, one that suggests that the veins or arteries of the heart itself were also involved in the same infectious process.

Secondary Carcinoma of Heart.—In one of Nicholls' cases, a columnar-cell adenocarcinoma of the papillary type situated in the colon at the hepatic flexure, there were metastases in the lungs, spleen, liver, pancreas and the right ventricle of the heart. In another unreported case seen by Osler in 1882, the primary carcinoma was in the uterus. A third case of secondary carcinoma of the right ventricle was one seen by Bell and Adami in 1899. The primary tumor was an adenocarcinoma of the stomach.

Torsion of Mesentery.—On the second day after birth, Niemeier's patient exhibited symptoms of intestinal obstruction. On the sixth day a laparotomy was performed. The stomach and duodenum were found distended, but the rest of the intestine was collapsed. At the duodenojejunal junction there was obviously a band or twist causing obstruction. The remainder of the bowel was convoluted into a mass resembling large fish worms and could be lifted right out of the abdomen, like a bunch of grapes. It did not nearly fill the abdomen. The transverse colon and cecum were included in the mass and had no attachment to the posterior abdominal wall. The mesentery was twisted at its origin, there being three turns from right to left in a clockwise direction.

Convalescent Serum in Whooping Cough.—In view of the recognized successful prevention of measles by the use of convalescent serum, it was thought by Wright that a similar type of treatment might be applicable in whooping cough. The method was successfully tried in three cases. From 8 to 10 cc. of a parent's blood was injected subcutaneously.

Journal of Cancer Research, Lancaster, Pa.

11: 1-134 (March) 1927

Quantitative Biologic Effects of Roentgen Rays of Different Wavelengths. C. Packard, New York.—p. 1.
Physicochemical and Biochemical Aspects of Malignant Neoplasms. W. C. M. Lewis, Liverpool.—p. 16.
*Relation of Heredity to Spontaneous Thyroid Tumors in Mice. XXV. M. Slye, Chicago.—p. 54.
Nature of Atrophy and Hyalinization of Cells and Tissues. M. T. Burrows, St. Louis.—p. 72.
*Effect of Radiation on Blood Cholesterol in Malignant Disease. W. L. Mattick and K. Buchwald, Buffalo.—p. 86.
Influence of Radiation on Cholesterol in Vitro. M. C. Reinhard, Buffalo. —p. 95.
*Tumor Massage and Metastases in Mice. M. C. Marsh, Buffalo.—p. 101.
Electrical Capacity of Tumors. N. Waterman, Amsterdam.—p. 108.
Sarcoma of Fowl Produced by Arsenic and Embryonic Pulp. A. W. M. White, Toronto.—p. 111.

*Insulinoid in Malignant Tumors. A. H. Roffo and L. M. Correa, Buenos Aires.—p. 126.
Survival Curves of Cells Under Radiation. J. C. Mottram, London.—p. 130.

Heredity of Cancer.—Among 61,700 necropsies performed by Slye on mice, comprising between 5,000 and 6,000 malignant neoplasms, there have occurred twenty-three thyroid enlargements: four simple colloid goiters, two papillary adenomas, and seventeen malignant growths. Environmental influences are eliminated as causative factors in the occurrence of thyroid cancer. Eleven of these malignant thyroid growths have occurred in one small strain of Japanese waltzing mice, consisting of 133 members, bred for thyroid malignancy. These eleven thyroid cancers have occurred in classic accordance with the laws of heredity for a mendelian recessive; thus, Slye says, heredity is shown to be an unquestionable factor in the occurrence of these thyroid cancers. The tendency to resistance to thyroid cancer is shown to be dominant over the tendency to susceptibility, and the mendelian ratio is closely approximated. Thus the results of this study are in every respect in exact accord with all other studies of cancer heredity in this laboratory, which have concerned themselves with organs other than the thyroid.

Effect of Radiation on Blood Cholesterol.—A decrease in the cholesterol level was noted by Mattick and Buchwald in the whole blood in 95 per cent of thirty-six patients after radiation treatment. This decrease was not sustained but tended to rise again to the preirradiation levels after varying periods of time and in the face of repeated irradiation treatments. No difference could be noted between this tendency to a drop in the cholesterol levels in the malignant and nonmalignant cases observed. In forty malignant cases, whole blood cholesterol values of 159.5 mg. per hundred cubic centimeters of blood was observed, thus not differing essentially from cholesterol values in healthy individuals.

Tumor Massage and Metastases.—Violent, long continued massage of spontaneous mammary tumors in fifty mice increased the percentage of mice bearing macroscopic metastases from 40 to 62. Marsh states that these mice are refractory to massage as a means of disseminating tumor cells. This fact greatly strengthens the inference that manipulation of the growth is a dangerous procedure in human cancer, and strongly supports the clinical evidence to that effect.

Insulinoid in Malignant Tumors.—By using the classic method of extraction with the modification of Sordelli, a hypoglycemic substance has been obtained by Roffo and Correa from spindle-cell sarcomas of rats which corresponds to the chemical and biologic characters of insulin.

Journal of Experimental Medicine, Baltimore

46: 205-390 (Aug. 1) 1927

*Inability to Transmit Rabbit Neoplasm by Cell-Free Materials. L. Pearce and J. B. Murphy, New York.—p. 205.
*Specific Substance of Cholera Vibrio. K. Landsteiner and P. Levine, New York.—p. 213.
*Experimental Syphilis: VII. A. M. Chesney, C. R. L. Halley and J. E. Kemp, Baltimore.—p. 223.
*Pneumococcus Growth Inhibition: VII. O. H. Robertson and R. H. P. Sia, Peking, China.—p. 239.
*Oxidation and Reduction of Immunologic Substances: VI. Pneumococcus. J. M. Neill and W. L. Fleming, Nashville, Tenn.—p. 263.
Id.: VII. Differentiation of Tetanolysin and Tetanospasmin. W. L. Fleming, Nashville, Tenn.—p. 279.
Effect of Heat on Antibodies. F. S. Jones, Princeton, N. J.—p. 291.
Agglutination by Precipitin. F. S. Jones, Princeton, N. J.—p. 303.
*Local Progression with Spontaneous Regression of Tuberculosis in Bone Marrow. C. A. Doan and F. R. Sabin, New York.—p. 315.
Immunity to Pneumococcus Mucosus (Type III): III. W. S. Tillett, New York.—p. 343.
Ultrafiltration. H. Zinsser and F. Tang, Boston.—p. 357.
*Nature of Toxic Moiety of Streptococcus Scarlatinae. C. W. Duval and R. J. Hibbard, New Orleans.—p. 379.

Failure of Experimental Transmission of Malignant Tumor.—Pearce and Murphy were unable to propagate a malignant neoplasm of the rabbit with cell-free filtrates or desiccated tumor tissue, or by the use of fluid mediums kept in contact with tumor tissue. These findings confirm the results of previous experiments carried out with early generations of the tumor. The existence of an agent distinct from the tumor cell which could initiate growth has not been demonstrated. The experiments bring out an essential biologic difference between this mammalian neoplasm which is considered to be of epithelial origin and certain filtrable tumors of fowls which have been classified as sarcomas.

Specific Substance of Cholera Vibrio.—The investigations described by Landsteiner and Levine show that it is possible to extract specific substances from *V. cholerae* by means of hot dilute alcohol. The original extract contains protein and exhibits antigenic properties. From this preparation an almost protein-free product was obtained. It was fully active in the precipitin test but had lost almost completely the antigenic activity. The precipitable but nonimmunizing substance is not a protein. On hydrolysis it yielded a considerable quantity of sugar, although less than that given for the specific carbohydrates of pneumococci and *B. friedlaenderi*. The product contains nitrogen and phosphorus, and on hydrolysis a substance of acid character separates from the solution. Accordingly the substance prepared would appear to have either a rather intricate structure or to be a complex carbohydrate, similar to those described by Avery and Heidelberger, but still containing impurities.

Experimental Syphilis.—Syphilitic rabbits, whether untreated or treated after the ninetieth day of infection, were found by Chesney et al. to be more refractory to subsequent inoculation with the homologous strain of *Spirochaeta pallida* than to inoculation with heterologous strains of the same organism, when clinical criteria alone were employed in judging the outcome of reinoculation. The incidence of second infection with homologous strains was 5.4 per cent, as against 50 per cent with heterologous strains. The resistance which develops in rabbits during the course of a syphilitic infection appears therefore to be strain-specific rather than species-specific. The protection afforded against homologous strains was found to persist for at least as long as six months after treatment was discontinued.

Pneumococcus Growth Inhibition.—The results of experiments made by Robertson and Sia strongly suggest that the differences in resistance which certain mammals normally exhibit toward pneumococcus infection are to be accounted for chiefly by the concentration of antipneumococcus opsonins present in their blood.

Oxidation and Reduction of Immunologic Substances in Pneumococcus.—The methods previously employed in the study of hemotoxins have been applied by Neill and Fleming to the oxidation and reduction of the bacteriolytic substance of pneumococcus. It is shown that the bacteriolytic agent, previously inactivated by oxidation, can be "reactivated" by treatment with bacterial reducing agents. Evidence is presented that this "reactivation" represents the reduction of inactive, reversible oxidation products to the original active substance. The bacteriolytic agent is an integral constituent of the pneumococcus cell, which can be separated from the hemotoxin by absorption with red blood cells in the cold.

Study of Tuberculosis of Bone Marrow.—With massive intravenous injections (1 to 2 mg.) of bovine tubercle bacilli in rabbits, Doan and Sabin noted a marked involvement of the bone marrow in the early acute phase. This reaction is initiated on the eighth to the tenth day by the development of large numbers of young monocytes in situ. From the twelfth to the twentieth day, approximately, there is an increasing development in bone marrow of typical tuberculous tissue, epithelioid cells and giant cells of the Langhans type, many showing tubercle bacilli. This new growth eliminates the normal fat cells and encroaches on and depresses the hematopoietic foci. The bone marrow always tends toward spontaneous healing, provided the animals survive the first acute reaction sufficiently long.

Nature of Toxins of Scarlatinal Streptococcus.—The work reported on by Duval and Hibbard constitutes further evidence in support of their original contention that the poisonous substance of the scarlatinal streptococcus is derived from the bacterial cell set free through the dissolution of the germ plasm. The liberation of the poison in vitro occurs as the natural result of autolysis, while in vivo it is produced through specific action of bacteriolysin.

Journal of Industrial Hygiene, Baltimore

9:315-370 (Aug.) 1927

*Silicosis and Tuberculosis in Granite Workers in Barre, Vermont. W. McFarland, Barre, Vt.—p. 315.
Metal Fume Fever: IV. Threshold Doses of Zinc Oxide, Preventive Measures, and Chronic Effects of Repeated Exposures. P. Drinker, R. M. Thomson and J. L. Finn, Boston.—p. 331.
Storage Battery Industry. A. Hamilton, Chicago.—p. 346.

Silicosis and Tuberculosis in Granite Workers.—McFarland states that physicians of Vermont should be vitally interested in silicosis and its prevention, not only for the sake of the granite industry but as a part of the public health program of the state. Granite workers develop silicosis after long exposure to granite dust and in time almost invariably develop tuberculosis as a complication. In making a diagnosis of silicosis there are certain constant signs which should be looked for. Care should be taken to differentiate simple silicosis from silicosis complicated by tuberculosis. Silicosis when complicated by tuberculosis runs a rapid course and the prognosis is always grave. Silicosis is preventable and steps should be taken to protect the workers by installing adequate exhaust and ventilating systems. The present incidence of silicosis and tuberculosis among granite workers is sufficient evidence that the exhaust and ventilating systems in use during their industrial life were inadequate.

J. Pharmacology & Exper. Therapeutics, Baltimore

31: 269-332 (Aug.) 1927

*Anesthetic Value of Nitrous Oxide Under Pressure. W. E. Brown, G. H. W. Lucas and V. E. Henderson, Toronto.—p. 269.
*Toxicity of Drugs After Hemorrhage. H. Gold, New York.—p. 291.
Electromotive Action of Drugs as Cause of Their Toxicity: I. R. Beutner, Louisville, Ky.—p. 305.
*Clinical Comparison of Three Preparations of Digitalis. A. R. Gilchrist and D. M. Lyon, Edinburgh.—p. 319.

Anesthetic Value of Nitrous Oxide Under Pressure.—Brown et al. have found that surgical anesthesia cannot be produced with oxygen-nitrous oxide mixtures under pressure up to two atmospheres if the partial pressure of the oxygen is equal to that in the atmosphere; namely, 156 mm. Surgical anesthesia with nitrous oxide depends not only on the depressing effect of the nitrous oxide on the cerebrum but also on the necessary presence of a certain degree of anoxemia. It is evident, therefore, that patients anesthetized with nitrous oxide will always suffer from a severe degree of anoxemia and that this must impose a limitation on its use and increase its dangers.

Toxicity of Drugs After Hemorrhage.—The experiments made by Gold show that after severe hemorrhage (from 15 to 25 cc. per kilogram) there is a marked increase in the susceptibility of the cat to strychnine, physostigmine, chloral hydrate and ouabain. Normal tolerance is restored temporarily by the injection of Locke's solution equal in quantity to the blood removed. Evidence is adduced which suggests that the diminished volume of circulating fluid is an important factor in the causation of decreased susceptibility, not by reason of the greater concentration of the drug in the blood stream, but because the volume of blood controls another factor; namely, distribution of blood to various organs of the body. The increased toxicity of drugs after hemorrhage may be due, in part at least, to a redistribution of the blood resulting in its carrying a relatively larger percentage of the drug to the vital structures than occurs in the normal animal.

Comparison of Three Digitalis Preparations.—Samples of powdered digitalis A, B and standard C have been administered by Gilchrist and Lyon 219 times to 122 patients by the massive dose method. The subjects included cases of auricular fibrillation, other types of heart disease, and a number with no cardiac involvement. In the absence of auricular fibrillation, the drug produced inconstant and usually comparatively slight results. When the results were analyzed, remarkable uniformity was observed in the reaction of cases of auricular fibrillation. The amount of pulse slowing was found to bear a relation to the rate of the heart at the time the drug was given. Clinical comparison of the strength of the three samples showed their relative values to be A, 64.3, B, 88.9 and C, 100.

Ohio State Medical Journal, Columbus

23: 631-710 (Aug.) 1927

Medical Biliary Tract Drainage. E. W. Shank, Dayton.—p. 651.
Biologic Foundations of Roentgen-Ray Therapy. K. G. Zwick, Cincinnati.—p. 654.
*Malarial and Tryparsamide Treatment of Paresis. N. W. Kaiser and M. K. Amdur, Toledo.—p. 656.
Study of Cytology of Diarrheal Stool in Infants. J. Zahorsky, St. Louis.—p. 663.
Congenital Hypertrophy of Heart. G. A. Woodhouse, Pleasant Hill.—p. 666.

Treatment of General Paralysis.—Out of fifty patients with neurosyphilis treated by Kaiser and Amdur with tryparsamide, nine have died; twenty-four have shown varying degrees of improvement; twenty have been released from the hospital; eleven are in complete remission from all mental symptoms; seventeen have either grown worse or are unimproved. Out of forty-three patients with general paralysis inoculated with malaria, eleven are still under treatment. Of the remaining thirty-two patients, eleven have shown definite improvement and seven of these are practically in a state of complete remission so far as mental symptoms are concerned. The spinal fluid has shown definite reduction in cell count and globulin content. The blood Wassermann reaction has become negative in two cases. The spinal fluid Wassermann reaction has remained unchanged. There has been a slight modification in the colloidal gold curve. Following both malarial and tryparsamide therapy, one case has shown very favorable response to malaria, and of fifteen cases which were not benefited by malaria, two have decidedly improved with tryparsamide.

Oklahoma State Med. Assoc. Journal, Muskogee

20: 221-248 (Aug.) 1927

Vincent's Disease. D. D. McHenry, Oklahoma City.—p. 221.
Effects of Electric Flashes on Eye. W. A. Cook, Tulsa.—p. 226.
Refraction—Oculist or Optician. L. A. Newton, Oklahoma City.—p. 227.
External Otitis—Complication. A. M. McMahan, Duncan.—p. 231.
Visual Field Studies in Sympathetic Ophthalmia. A. C. McFarling, Shawnee.—p. 232.
Sarcoma of Choroid: Three Cases. J. F. Gorrell, Tulsa.—p. 235.

Philippine Islands Med. Assoc. Journal, Manila

7: 235-274 (July) 1927

Study of Cases of Suicide. P. Anzures, Manila.—p. 235.
Accident Cases Received in Philippine General Hospital. F. R. Villaroman, Manila.—p. 243.
Study of Epidemic of Bacillary Dysentery. J. Albert and J. O. Quiason, Manila.—p. 246.
Obstetric Forceps for Use in Right Anterior or Left Posterior Occipital Presentations. H. A. Sison, Manila.—p. 250.
Pathogenicity of Blastocystis Hominis. O. Garcia, Manila.—p. 251.

Philippine Journal of Science, Manila

33: 233-329 (July) 1927

Inquiry into Serologic Side-Effects of Antirabic Preventive Treatment. K. Yasuyama, Manila.—p. 233.
Development of Ascaris Ova. C. Manalang, Zamboanga, P. I.—p. 249.
*Chaulmoogryl Amino-Benzoic Acids and Chaulmoogra Anilides. S. Santiago and A. P. West, Manila.—p. 265.

New Chaulmoogra Compounds.—Four new chaulmoogra compounds have been prepared by Santiago and West: chaulmoograbutylanilide, chaulmoogra-isobutylanilide, chaulmoogryl *p*-amino benzoic acid, and chaulmoogryl *o*-amino benzoic acid.

Public Health Reports, Washington, D. C.

42: 1997-2044 (Aug. 5) 1927

Some Tests of Larvicide "Stoxal." M. A. Barber and W. H. W. Komp, Washington, D. C.—p. 1997.

42: 2045-2096 (Aug. 12) 1927

Bubonic Plague and Maritime Quarantine. S. B. Grubbs, Washington, D. C.—p. 2045.

Rhode Island Med. Journal, Providence

10: 115-128 (Aug.) 1927

Some Problems in Bone and Joint Injury in Upper Extremity Briefly Considered. T. T. Thomas, Philadelphia.—p. 118.

South Carolina Med. Assoc. Journal, Greenville

23: 433-456 (Aug.) 1927

Rôle of Emotions in General Medical Problems. W. W. Young, Atlanta, Ga.—p. 441.
Periodic Health Examinations. F. M. Routh, Columbia.—p. 443.
Otitis Media in Children. W. B. McWhorter, Anderson.—p. 445.
Epiphyseal or Adolescent Coxa Vara. O. L. Miller, Charlotte and Gastonia.—p. 447.

Southern Medical Journal, Birmingham

20: 579-668 (Aug.) 1927

Treatment of Acute Comminuted Fractures About Elbow Joint: Sixty Cases. H. E. Conwell, Fairfield, Ala.—p. 579.
Fractures of Upper Third of Ulna. I. Cohn, New Orleans.—p. 585.
Open Reduction of Fractures of Forearm. A. M. Shipley, Baltimore.—p. 595.
Fungus Disease of Skin. J. R. Allison, Columbia, S. C.—p. 604.
*Trichophytosis in Southern States. J. L. Kirby-Smith, Jacksonville, Fla.—p. 606.
Chronic Frontal Sinusitis: Surgical Treatment. E. G. Gill, Roanoke, Va.—p. 612.
*Incidence of Sinus Diseases Among Children of Gulf Coast. C. A. McWilliams, Gulfport, Miss.—p. 616.
Relation of Inflammation of Maxillary Sinus to That of Nose and Other Paranasal Sinuses. J. D. Heitger, Louisville, Ky.—p. 618.
Thymus Disease. J. D. MacRae, Asheville, N. C.—p. 628.
Acute Poliomyelitis. R. M. Pollitzer, Greenville, S. C.—p. 631.
Effect of Atropinization on External Pancreatic Enzymes in Man. L. Martin, Baltimore.—p. 636.
*Intracranial Hemorrhage in New-Born. M. H. Roberts, Atlanta, Ga.—p. 642.
Two Thousand Fractures. E. D. Newell, Chattanooga, Tenn.—p. 644.
Gentleness in Urology. R. Bolend, Oklahoma City.—p. 648.
Present and Future Economic Status of Obstetrics. J. L. Andrews, Memphis.—p. 650.
Madura Foot in Georgia Negro. C. C. Harrold, Macon, Ga.—p. 654.
North Carolina Sanitary Privy Law. G. M. Cooper, Raleigh, N. C.—p. 655.
Sanitary Privy. W. R. Culbertson, Norton, Va.—p. 657.

Trichophytosis in Southern States.—Kirby-Smith states that ringworm is a very common infection in Florida. During the rainy summer months of June, July and August, 250 cases were seen, out of a total office practice of 550 new patients. In other words, during those three months the ringworm patients constituted about 45 per cent of the author's practice.

Sinus Disease in Gulf Coast Children.—During a year and a half, McWilliams has seen 183 cases of sinus disease in children, of which surgery was necessary for a cure in eighty cases. The incidence of season is important, there being 80 per cent during the three winter months. He has not seen any case due to salt water swimming.

Intracranial Hemorrhage in New-Born.—A detailed study of sixty-three cases of intracranial hemorrhage is given by Roberts. Only twenty-nine, or 46 per cent, showed symptoms of hemorrhage, the others being apparently normal. Ten patients died within twelve days of birth, the deaths undoubtedly the result of intracranial hemorrhage as shown at autopsy in five cases. Four died later because of some intercurrent infection. Forty-four are living today, only three of whom show any evidence of intracranial hemorrhage. The remaining forty-one are free of any symptoms attributable to a pathologic condition of the central nervous system.

Southwestern Medicine, Phoenix, Ariz.

11: 343-386 (Aug.) 1927

Correct Principles in Diet. O. H. Brown, Phoenix.—p. 343.
Cautery Treatment of Cancer. C. E. Rees, San Diego, Calif.—p. 349.
Low Transperitoneal Cesarean Section. S. N. Pierce, Los Angeles.—p. 352.
Lupus Vulgaris in Arizona. N. D. Brayton, Miami, Ariz.—p. 357.
Bunions. M. C. Harding, San Diego, Calif.—p. 360.
Brittle Bones and Blue Sclera. E. G. Colby, San Diego, Calif.—p. 362.
Treatment of Infections with Mercurochrome Intravenously. W. C. Cain, Yuma, Ariz.—p. 364.

Surgery, Gynecology and Obstetrics, Chicago

45: 129-256 (Aug.) 1927

*Uterosalpingography: Roentgenologic Visualization of Cavity of Uterus and Fallopian Tubes After Injection of Iodized Oils. J. Jarcho, New York.—p. 129.
Torsion of Hydrosalpinx. N. J. Eastman, Peking.—p. 143.
*Hydatid Disease: Echinococcus Cysts. L. E. Barnett, Dunedin, New Zealand.—p. 148.
Fibrolipoma Closely Simulating in Form and Location Tumor of Right Kidney: Subacute Appendicitis. T. S. Cullen, Baltimore.—p. 152.
Simple Uncomplicated Rotary Dislocation of Atlas. R. H. Jackson, Madison, Wis.—p. 156.
Urachus and Umbilical Fistulae. R. C. Begg, Wellington, New Zealand.—p. 165.
Meningeal Fibroblastoma; Perineural Fibroblastoma and Neurofibroma of von Recklinghausen. W. Penfield, New York.—p. 178.
*Endocrine Causes of Sterility in Women. R. T. Frank, New York.—p. 189.
Hydrocele of Tunica Vaginalis: 502 Cases. M. F. Campbell, New York.—p. 192.
Gastro-Enterostomy. J. B. Deaver, Philadelphia.—p. 201.
*Technic of Gastric Resection. E. Neuber, Budapest, Hungary.—p. 204.
*Tumors of Carotid Body. R. P. Sullivan and A. Fraser, New York.—p. 209.
*Operation for Extra-Articular Fusion of Sacro-Iliac Joint. W. C. Campbell, Memphis, Tenn.—p. 218.
Injuries to Menisci and Ligamentum Muscosum; Internal Derangements of Knee Joint. W. R. Cubbins and A. H. Conley, Chicago.—p. 220.
Repair of Vesicovaginal Fistula. H. H. Young, Baltimore.—p. 226.
Surgical Treatment of Retrodisplacements of Uterus. M. Douglass, Cleveland.—p. 230.
Indication for Operation in Puerperal Pelvic Thrombophlebitis. A. Turenne, Montevideo, Uruguay.—p. 235.

Uterosalpingography.—Jarcho relates his experience with the intra-uterine injection of iodized oil. He says it is entirely safe and harmless, and no manifestations of iodism have been observed.

Hydatid Disease.—The versatility of the scolex in the propagation of cysts as well as of the adult tapeworm is emphasized by Barnett. Not more than 50 per cent of hydatid cysts can be diagnosed by ordinary clinical methods, but the laboratory has provided two tests of extraordinary value, the Casoni skin reaction, and the complement fixation estimation whereby correct diagnosis can be raised to 80 or 90 per cent. The rarity of hydatid thrill is explained. Exploratory puncture is condemned because of its many dangers. Operative treatment by open incision, evacuation, and closure without drainage is recognized as the mode of election.

Endocrine Causes of Sterility.—The nonmechanical types of sterility in the female, in Frank's opinion, are due to a general systemic or a local form (or in many instances, a combination of these two forms) of underdevelopment of "femininess." According to the conditions present, women may be grouped as typical (normal feminine), infantile, neuter and pseudomasculine. The treatment is divisible into general and local. Under general, Frank emphasizes restricted diet and thyroid substance for the obese, roborant measures and overfeeding for the hypoplastic; for both groups, hygiene of the social life and control of the sex life. Local measures consist of stimulation of the ovarian function by means of the roentgen rays in rare instances, and the promise of an efficient hormone preparation in the very near future.

Technic of Gastric Resection.—Neuber operates under splanchnic anesthesia and uses Hueltl's sewing clamp.

Tumors of Carotid Body.—Two cases of true neoplasm arising from the carotid body are reported by Sullivan and Fraser. One was a neuroblastoma, the other a paraganglioma.

Extra-Articular Fusion of Sacro-Iliac Joint.—Campbell describes an extra-articular ankylosis done posterior to the joint. The dorsum of the ilium is exposed. The crest of the ilium is dissected free to raw bone and the adjacent fibrous tissue removed from the posterior surface of the sacrum beneath the region of the erector spinae, or sacrospinal muscle. A portion of the crest is removed and placed in a towel. The inner surface of the overhanging portion of the crest of the ilium is denuded, and a raw gutter made parallel with the sacro-iliac joint, formed by the posterior surface of the sacrum and the inner surface of the ilium posterior to the sacro-iliac joint. Into this space is placed the graft from the crest. Multiple grafts or "shavings" are next secured from the dorsum of the ilium and placed into the gutter until the space is well filled, when the wound is closed in layers. The patient is placed on a Bradford frame for a period of six weeks, when a low back brace with sacro-iliac belt is applied. This method has been used in seven cases to the present time; in five, the results are apparently satisfactory, and pain has been entirely relieved. In two cases, sufficient time has not elapsed to determine the effect of the procedure.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Indian Medical Gazette, Calcutta

62: 359-418 (July) 1927

*Etiology of Epidemic Dropsy. H. W. Acton and R. N. Chopra.—p. 359.
*Test for Kala-Agar. L. E. Napier.—p. 362.
*Food Value of Nut of Trapa Bispinosa. B. B. Brahmachari and N. K. Chatterjee.—p. 365.
Chemistry of Blood of Normal Healthy Indians: Variations in Disease. J. P. Bose.—p. 370.
*Bacillary Dysentery Treated with Bacteriophage. R. H. Malone and W. Bird.—p. 373.
Sanocrysin Treatment of Tuberculosis. C. Frimodt-Moller.—p. 375.
Disease of Gallbladder and Gallstones. J. R. Roberts.—p. 380.
Intravenous Iodine in Pneumonia. K. C. Ghose.—p. 381.
Kala-Azar in Simla Hills. P. Savage.—p. 382.
*Germicidal Power of Ethyl Alcohol in Spirits. B. B. Brahmachari.—p. 384.
Lipoma of Cheek and Neck. K. Daleppa.—p. 385.
Piece of Lead in Larynx. S. N. Mukerji.—p. 386.
Case of Stiff Jaw After Cancrum Oris. S. N. Mukerji.—p. 387.
Cirsoid Aneurysm of Dorsalis Pedis Artery. A. K. Dutt Gupta.—p. 387.
Case of Acute Yellow Atrophy of Liver. K. J. Shivdasani.—p. 387.
Ascaris Lumbricoides Infestation Simulating Cholera. M. Barooa.—p. 388.
Case of Malaria. S. B. Mukerjee.—p. 388.

Etiology of Epidemic Dropsy.—Acton and Chopra have noted a close association between epidemic dropsy and the wetting of rice by sudden storms or flooding, which allows decomposition to start in the rice, and then produces these poisonous bases. The excessive humidity that occurs during the monsoon months is also dangerous when rice is stored in stacks and in ill ventilated godowns. The diarrhea that is produced is due to the action of these water-soluble bases causing edema of the mucous membrane and exfoliation of the epithelium. The damaged mucous membrane now allows the intestinal cocci and bacilli to invade the blood stream and thus produce the fever. These organisms can be found in the urine by suitable methods of culture. The stools in the acute stage of the disease show large numbers of gram-positive organisms. The rice bacillus can be cultivated from the stools of these cases, provided the medium contains no bile salts. It is possible that infections may occur of the stomach and duodenum by these organisms, and under rare conditions the disease may be spread from person to person when contact is intimate.

Test for Kala-Azar.—The test described by Napier—but which was worked out by Chopra—is performed by adding 2 drops of a 24 hour old serum to 2 cc. of a 0.25 per cent solution of stiburea, or 2 drops of freshly separated serum to 2 cc. of a 1 per cent solution of stiburea, agitating and leaving on the laboratory bench for ten minutes. If the serum is from a patient suffering from kala-azar a heavy flocculent precipitate will form which will separate within ten minutes, leaving a clear supernatant fluid.

Food Value of Bengal Water Nut.—The nut of *Trapa bispinosa*, the water nut of Bengal, is recommended by Brahmachari and Chatterjee as a supplementary staple food. As a food for invalids, fresh nuts are very suitable, while its flour, the palo, compares favorably with such light farinaceous foods as arrowroots, sago or rice. In its iron and phosphorus content it may well have the valuable hematinic alterative effects attributed to it in the medical literature of ancient India. Incidentally, the discovery of its characteristic starch granules will make detection of its use as an adulterant easy.

Bacillary Dysentery Treated with Bacteriophage.—In the three cases cited by Malone and Bird, bacteriophage was a potent factor in cutting short the disease. It is suggested that its value as a therapeutic agent in dysentery be studied more extensively.

Germicidal Value of Ethyl Alcohol.—Brahmachari's investigation shows that *V. cholerae* does not stand even 11.8 per cent of alcohol, i. e., 85 per cent under proof, for more than four hours, and in 7.8 per cent alcohol, i. e., 86.3 per cent under proof, it disappears in one day. *B. typhosus* is more resistant, the limit of safety from it being still 11.48 per cent., i. e., 80 per cent under proof, in which it does not survive longer than one day. For dysentery bacilli the dilutions should not be more than 15.75 per cent, i. e., 72.5 per cent under proof, in which they disappear after four hours; at the next higher dilution, namely, 80 per cent, they survive for three days.

Journal of Laryngology and Otology, Edinburgh

42: 505-576 (Aug.) 1927

Localization of Cortical Center for Hearing. F. W. Watkyn-Thomas.—p. 505. (To be Concl'd.)
Glossopharyngeal-Facial Nerve Anastomosis: Two Cases. E. Watson-Williams.—p. 516.
*Operative Treatment in Children with Chronic Suppurative Otitis Media. F. B. Gilhespy.—p. 520.
*Treatment of Furunculosis by Diathermy. J. Hunter.—p. 524.
*Paths of Infection to Brain, Meninges and Venous Blood Sinuses from Neighboring Peripheral Foci of Inflammation: V. A. L. Turner and F. E. Reynolds.—p. 525.
Acute Middle-Ear Suppuration (Left), with Temporal Lobe Abscess and Meningitis: Recovery. H. B. Tawse.—p. 532.
Acute Middle-Ear Suppuration (Left), with Symptoms Suggesting Meningitis and Temporal Lobe Abscess: Recovery. H. B. Tawse.—p. 535.

Operation in Chronic Suppurative Otitis Media.—In thirty-seven cases of chronic suppurative otitis media in children defying local treatment, thirty-one radical operations were performed by Gilhespy with resulting dry ears in twenty-two cases; in two cases a conservative mastoid operation was performed successfully, and in three cases a Schwartze operation was done, resulting in only one dry ear.

Treatment of Furunculosis by Diathermy.—Hunter reports the case of a woman who was severely affected with furunculosis at longer or shorter intervals during three years. Both external acoustic canals were vulnerable to attacks. Treatment by diathermy was begun during a most severe attack. The left acoustic canal was occluded, and the pain was most intense. Tin electrodes, 2-2, were held tightly against the ears, and the "heat of toleration" produced. In a minute or two the pain was relieved. Treatment was continued for fifteen minutes. The patient went home and slept soundly for ten hours. The pillow was saturated with pus when she awoke—the first spontaneous evacuation of pus. No sign or symptom of a furuncle has appeared since the first treatment a year ago. The treatment was continued at intervals for two months to insure immunity.

Acute Purulent Leptomeningitis Following Operation on Ethmoid Cells.—Turner and Reynolds report a case of acute purulent leptomeningitis, supervening an operation on the ethmoidal air cavities. Microscopic examination of the tissues demonstrated that the infection spread along the lymph sheaths of the olfactory nerves.

Kenya & E. African Med. Jour., Nairobi, E. Africa

4: 101-130 (July) 1927

*Occurrence of Intestinal Parasites in Patients at Native Hospital, Nairobi. J. C. J. Callanan.—p. 103.
Erythema Simulating Scarlatina. T. F. Anderson.—p. 113.
*Unusual Case of Lactation. W. J. Jago.—p. 114.
*Malignant Tumor of Stomach. W. Chand.—p. 116.
Foreign Body (Fish Bone) in Abdominal Wall. N. P. Jewell.—p. 120.
Relapsing Fever in Meru. A. S. Mackie.—p. 121.
Leech Infection. F. N. Green.—p. 122.
Use of Glycerin as Anthelmintic in Ankylostomiasis. J. A. Carman.—p. 123.
Case of Death from Lightning at Nairobi. J. A. Carman.—p. 125.
Vesical Fistula Complicating Labor. H. R. A. Philp.—p. 126.

Intestinal Parasites in East Africa.—Of 1,000 feces examined by Callanan, 750 contained parasites; 48.7 per cent of cases harbored helminths; 9.2 per cent of cases harbored protozoa; 17.1 per cent of cases harbored protozoa and helminths. Only a single fecal specimen from each case was examined. Callanan feels that repeated examination of stools from the same natives would undoubtedly disclose a far higher rate of infection.

Unusual Case of Lactation.—Jago reports a case of lactation in a woman who had never been pregnant but who wanted a child. She got one at birth from another woman and nursed it. She had a copious flow of milk. Jago feels that this case proves that lactation is psychically produced. That is to say, the other sensations of pregnancy stimulate the conscious and unconscious mind to the necessity of pre-

paring for the feeding of the infant, and thus the trophic nerves to the breasts are activated.

Lymphoblastoma of Stomach and Kidney.—Chand reports the case of a man, aged 28, who had fever, extremely irregular in type, ranging from 97.4 to 100 F., remitting equally irregularly for periods of from one to seven days; pain, of varying degrees of severity, in all the muscles of the limbs, worse at night and disappearing occasionally for hours, and who was greatly emaciated. Facial paralysis on the right side appeared and never abated. Profound coma with rigidity but without retraction of the neck supervened twenty hours before death and lasted till the end. The appetite was very good; neither nausea nor vomiting ever occurred. Flatulence and constipation never attracted notice. Pain in the abdomen was never complained of, except a feeling of heaviness over the left lobe of the liver three days before death; this organ was much enlarged. A diagnosis could not be established. At the necropsy, a lymphoblastoma was found in the kidney, in the lymph gland and in the stomach.

Lancet, London

2: 265-316 (Aug. 6) 1927

*Coordination of Respiration and Circulation with Variations in Bodily Activity: II. C. G. Douglas.—p. 265.
*Preparation of Patients for Operation. W. E. M. Mitchell.—p. 270.
Relation of Funiculitis to Hydrocele in Egypt. A. B. Ibrahim.—p. 272.
*Diabetic Gangrene Treated by Conservative Surgical Measures: Two Cases. R. Brooke.—p. 274.
*Character of Cerebral Cerebrospinal Fluid in General Paralysis. H. Carlill and W. E. C. Dickson.—p. 275.
Fatal Case of Food Poisoning with Delayed Nervous Symptoms. A. H. D. Smith.—p. 276.
Acute Hemorrhagic Pancreatitis: Two Cases. J. D. Dhruv.—p. 276.

Correlation of Respiration; Circulation and Bodily Activity.—Douglas asserts the coordination of the circulation with increase in muscular activity seems to be attained by the cooperation of chemical and nervous factors. In the chemical changes resulting directly from alteration in the metabolism and in reflexes, whether peripheral or central, initiated by stimuli originating in the active muscles may be found the cause not only of local vascular dilatation but also of compensatory vasoconstriction. The heart responds automatically to the resultant increased venous return and to the accelerator reflex to which it is subject and to its own potential capacity for increasing its amplitude of beat. The correct adjustment of the whole circulation is, in fact, set by those peripheral organs whose activity happens to change, but in obtaining their own appropriate supply of blood the rest of the body does not suffer.

Preparation of Patients for Operation.—The scheme presented by Mitchell aims at presenting the patient to the surgeon on the operating table with his mind well rested by refreshing sleep, and his nervous energy conserved by the absence of excitement and long suspense before the early morning operation. His tissues are not desiccated by excessive excretion of fluids, the result of perspiration, increased frequency of micturition and even diarrhea, which often follow nervous excitement. The patient comes to operation with his tissues adequately supplied with water, his food reserves in their usual state, his metabolism adjusted as perfectly as may be, and his intestines working normally—in short, in such a condition of fitness that the shock of operation may affect him as little as possible. Mitchell disparages lavage, purging and starvation before operating.

Treatment of Diabetic Gangrene.—The method adopted by Brooke in the treatment of diabetic gangrene, as illustrated by two cases, was briefly as follows: A very short preliminary course of insulin with radiant heat was given, in order to render the patient more fit for the operation to follow. This was followed by early operation. The operation of choice was a combined method of periarterial sympathectomy of the femoral artery in Hunter's canal, with ligature of the femoral vein. After an interval of ten days or a fortnight, low amputation (a Syme's) was performed in the second case as a time-saving measure to insure more rapid convalescence.

Cerebrospinal Fluid in General Paralysis.—Carlill and Dickson examined separately the ventricular and the lumbar fluids. There was a marked difference in the observations.

Medical Journal of Australia, Sydney

2: 105-140 (July 23) 1927

Medical Aspects of Empyema. A. V. M. Anderson.—p. 106.
*Treatment of Empyema in Children. R. M. Downes.—p. 107.
Treatment of Empyema in Adults by Thoracotomy and Drainage. W. A. Hailes.—p. 112.
Zinc Ionization in Ophthalmic Work. E. T. Smith.—p. 115.
Cancer Outlook. D. Kelly.—p. 116.
Hydatid of Lung: Spontaneous Pneumothorax. G. Griffiths.—p. 121.
Pseudohermaphroditism. A. E. Coates.—p. 122.

Treatment of Empyema in Children.—Downes analyzes 446 cases of empyema in children. There were 128 deaths, a mortality of 29 per cent. He divides the cases into two classes. In the first class are those deaths in which the empyema can be regarded as only one factor, and often a minor one, in the clinical picture. Examples are pneumonic pyemia, meningitis and peritonitis, generalized tuberculosis, intrathoracic sarcoma and pylephlebitis secondary to appendical abscess; in these conditions death is probably largely independent of the empyema. The second class comprises those cases in which there is no excuse, apart from the primary pneumonia from which the empyema has arisen, for failure of treatment. If treatment is considered in relation to this class alone, the mortality is only 17 per cent. The greatest incidence of the disease is during infancy. The number of deaths in this period is 59 per cent of the whole. The pneumococcus was found in 252 cases examined bacteriologically. In thirty-nine cases the staphylococcus, and in nineteen cases the streptococcus was found. The mortality rate among those cases was 27.23 and 47 per cent, respectively. Of 235 patients subjected to rib resection, forty died; the highest death rate, 29 per cent, resulted from intercostal incision.

South Africa Med. Assoc. Journal, Cape Town

1: 353-380 (July 23) 1927

Psychology of Quackery. B. J. F. Laubscher.—p. 355.
Tumor of Left Temporosphenoidal Lobe Associated with Speech Changes. M. J. Cohen.—p. 358.
Postgraduate Teaching on Witwatersrand. R. A. Dart.—p. 361.
Eye Disease in Relation to General Disease. H. Symonds.—p. 363.
Efficacy of Certain Reagents as Destructors of Flies. A. Ingram and B. de Meillon.—p. 366.
*Poisoning by Jatropha Curcas, L. (Physic Nut Tree or Purging Nut Tree). J. M. Watt and M. G. Brandwijk.—p. 370.
*Gonococcal Endocarditis. I. W. Brebner and G. Buchanan.—p. 371.

Poisoning by Purging Nut Tree.—Watt and Brandwijk assert that the poisoning in these cases is due to two irritant substances, an acid of the crotonoleic type, and a toxalbumin, curcin, which in addition produces deleterious effects on the blood. The best treatment is to wash out the stomach thoroughly and to give demulcents. As the symptoms in some of the recorded cases seem to have taken some time to develop, it is worth while washing out the stomach immediately in cases in which it is known that the nut has been eaten in quantity, even though symptoms may not have appeared.

Gonococcal Endocarditis.—Brebner and Buchanan's patient was ill about two months with endocarditis of unknown etiology. At the necropsy, cultures and smears were made from the massive vegetations which almost occluded the orifice of the mitral valve. A diplococcus, similar to that found in the smears from the vegetations, was with difficulty ultimately isolated in pure culture. This organism was definitely proved to be the gonococcus. Brebner and Buchanan feel that the occurrence of gonococcal endocarditis, owing to the difficulty of establishing the diagnosis, may be overlooked.

Arch. f. Japanische Chirurgie, Kyoto

4: 1-126 (July 20) 1927

*Relation of Thiersch Skin Transplant to Blood Groups. K. Matsuda.—p. 1.
Hernia Duodenojejunalis with Dilatation of Duodenum and Duodenal Diverticulum. K. Hirota.—p. 30.
Change in Blood Flow in Extremities as Result of Interruption of Peripheral Nerve Conduction. S. Yoshitomi.—p. 35.
*Madelung's Deformity in Truk Islands in South Seas: Relation to Frambesia. T. Matsunaga.—p. 53.

Relation of Thiersch Skin Graft to Blood Groups.—Matsuda has found that the best results in skin transplantation are obtained when autotransplants are used. Homotransplants often do equally well if donor and recipient are of the same blood group. When this is not the case, the transplant necrotizes in from one to five weeks and is shed off.

Madelung's Deformity and Frambesia.—The patient in the case cited by Matsunaga was 17 years of age. He did not present subjective symptoms. His condition was discovered accidentally. Only the arms were affected by the disease. As to etiology, the author suggests that a preceding frambesia might have to be considered.

China Medical Journal, Shanghai

41: 502-594 (June) 1927

Nervous Complications in Pernicious Malaria. E. de Vries.—p. 502.
Anopheline Mosquitoes of Peking Area. H. E. Meleney, C. U. Lee and H. L. Chang.—p. 509.
*Rapid Method of Blood Matching. C. E. Lim and K. Yao.—p. 513.
*Blood Sedimentation Test in Puerperium. N. J. Eastman.—p. 517.
Periodic Health Examinations. J. G. Vaughan, New York.—p. 525.
Paris Green (Copper Aceto Arsenite) as Anopheles Larvicide. L. W. Hackett.—p. 531.
*Incidence of Syphilis at Shantung Christian University Dispensary. L. F. Heimburger.—p. 541.
Fistula-in-Ano: 150 Cases. P. C. Tung.—p. 550.
Use of Lead Acetate, Intravenously in Cases of Two Tumors. H. R. Pakenham.—p. 556.
Typhoid Perforation: Five Cases. A. C. Hutcheson.—p. 559.
Case of Heat Stroke. L. S. Huizenga.—p. 566.

Rapid Method of Blood Matching.—With the object of reducing the time taken for the test, an attempt has been made by Lim and Yao to modify the generally accepted procedure in the matching. Instead of a venipuncture, an ordinary ear or finger prick is the only operation that is required for obtaining the serum for the test. A few drops of blood are taken in approximately ten times the amount of citrated saline solution and then four or five drops of blood are spread on a clean slide and allowed to dry in the air; this takes only from three to five minutes. Drying can be hastened by blowing gently on the slide. After the desiccation is completed, two or three drops of physiologic sodium chloride solution are then put on the slide and with a clean glass rod spread over the blood, the slide being gently tilted a few times so as to let the saline solution dissolve the dried serum without taking up many of the corpuscles. The same procedure is carried out for both the donor and the patient. A drop of the dissolved serum of the patient and a drop of the donor's cell suspension are mixed on a cover glass, which is inverted on a hollow ground slide and allowed to stand at room temperature for fifteen minutes before a reading is taken; a second reading fifteen minutes after would be advisable. A similar preparation of the donor's serum and the patient's cell suspension is set up. Parallel to the test a control of a drop of saline solution mixed with a drop of cell suspension of the donor and the patient, respectively, should be made. Agglutination of the patient's serum with the donor's cells or vice versa shows that they are incompatible.

Blood Sedimentation Test in Puerperium.—The sedimentation rate of the red blood corpuscles has been studied by Eastman in ninety-six puerperas in an effort to determine the prognostic value of this phenomenon in infected and potentially infected cases. The Linzenmeier technic was used, the test being employed usually in the first three days of the puerperium. It has been found that the sedimentation time falls before other signs of puerperal sepsis appear. Rates well over thirty minutes indicate absence of sepsis, while rates under thirty minutes, particularly under twenty minutes, point to active infection. Since the readings usually forecast in a general way the subsequent course of the puerperium, they frequently are of considerable prognostic value. Sedimentation rates following cesarean section assume a lower level than following vaginal deliveries but are nevertheless helpful in predicting the character of the convalescence. It is suggested that the sedimentation test, depending as it does on the amount of tissue necrosis taking place, may bear direct relationship with the character of union in the cesarean wound and thus forecast the strength of the subsequent scar.

Incidence of Syphilis in China.—The incidence and types of syphilis as seen among 2,000 consecutive cases of undoubted syphilis are discussed by Heimburger. The Wassermann reaction was positive in 92.5 per cent and doubtful or negative in 7.5 per cent. The 2,000 cases represent 5.7 per cent of the total number of new patients admitted to all departments of the outpatient departments, over the same period of time. These cases represent 27.5 per cent of the total number of new patients visiting the dermatologic clinic in a similar period. Among this group of cases 1,511 were male and 489 were female.

Archives des Maladies du Coeur, etc., Paris

20: 441-512 (July) 1927

Cardiac Effects of Chloral. E. Frommel.—p. 441.
*Variations of Capillary Calibre. M. Volterra.—p. 451.
Myeloid Leukemia and Pernicious Anemia. C. Vlados.—p. 460.

Determining Factor in Variations of Capillary Caliber.—In an earlier work, Volterra established that the capillary vessels possess, outside of the endothelium, an adventitial layer of reticular connective tissue, forming an integral part of the capillary wall, even in the regions where connective tissue is lacking; and that the pericapillary cells are the hemohistoblastic elements of this reticular tissue, identical with all other cells of this tissue, lacking in prolongations and hence incapable of exercising any contractile action. If an autonomous capacity of the capillaries to govern their caliber exists, it should be sought elsewhere than in a hypothetic contractile activity of the pericapillary cells. One may suppose that capillary dilatation follows augmentation of the hydrogen ions in the connective colloid, provoked by parasympathetic action, and that capillary contraction is consecutive to diminution of the hydrogen ions due to sympathetic action. Vagal action: liberation of potassium ions, acidification, swelling of the adventitial colloid, dilatation of the capillary; and, on the other hand, sympathetic action: liberation of calcium ions, alkalinization, reduction of the swelling, contraction of the capillary; these are the links of a chain.

Bulletin de l'Académie de Médecine, Paris

98: 57-115 (July 19) 1927

Infectious Exanthem of Undetermined Nature. Bezançon et al.—p. 59.
*Benign Endemic Typhus (Brill's Disease). A. Netter.—p. 71.
Standardization of Antirabic Treatment. P. Remlinger.—p. 82.
*Contagion, Heredity and Chance in Cancer. A. Lumière.—p. 89.
Norhomoephedrine. Tiffeneau.—p. 101.
*Long Period Alternating Galvanic Waves. Laquerrière.—p. 105.
Thermic Insulation, Permeability and Affinity for Water of Materials Used for Underwear. E. Techoueyres and M. Walbaum.—p. 107.
Antidysenteric Drug from Uzara Plant. Raymond-Hamet.—p. 109.

Benign Endemic Typhus (Brill's Disease).—Netter reviews the work of Brill and others. In Brill's disease the louse cannot be incriminated; the virus, a mutation of the typhus virus, seems to be carried by the mouse. The disease is not passed from man to man.

Contagion, Heredity and Chance in Cancer.—Clinical and statistical documents, concerning cancer contagion in marriage and cancer houses, examined and analyzed by Lumière, do not prove cancer contagious or hereditary.

Long Period Alternating Galvanic Waves.—Laquerrière modified the d'Arsonval apparatus. Connected with a source of direct current, the author's apparatus furnishes a galvanic current the intensity of which increases progressively, remains constant from eight to sixty seconds, decreases gradually to zero, and then makes an exactly similar wave in the opposite direction. These waves may be used for their effect on tissue nutrition and in contracting the muscle for exercise.

Bull. de la Société Méd. des Hôpitaux, Paris

43: 1099-1166 (July 14) 1927

*Case of Silent Mitral Stenosis. F. Trémolières and A. R. Salmon.—p. 1100.
Pulmonary Aspergillosis Clinically Primary. Macaigne and Nicaud.—p. 1103.
*Humoral Reactions in Pulmonary Aspergillosis. Macaigne and Nicaud.—p. 1109.
Case of Familial Neurofibromatosis with Nanism. Laignel-Lavastine and Ravier.—p. 1112.
Tremor Mercurialis. Laignel-Lavastine et al.—p. 1116.

Calf's Liver in Treatment of Pernicious Anemia. F. Rathery and M. Maximin.—p. 1122.
*Nephropancreatic Syndrome. M. Labbé et al.—p. 1127.
Hemorrhagic Pleurisy of Tuberculous Nature. Lancelin and Bideau.—p. 1136.
Abscess of Spinal Cord After Typhoid Pleurisy. C. I. Urechia and M. Matyas.—p. 1137.
Prognosis of Complete Arrythmia. A. Clerc and R. Stieffel.—p. 1139.
Gas Acidosis and Pulmonary Sclerosis. F. Bezançon et al.—p. 1147.
Spirochetes Associated with Anaerobes in Putrid Pleurisy. F. Bezançon et al.—p. 1153.
*Anasarca of Alimentary Origin. L. Ribadeau-Dumas et al.—p. 1157.
Cure of Pneumococcal Pericarditis by Epigastric Pericardiotomy. L. Ramond and R. Weill-Spire.—p. 1163.

Silent Mitral Stenosis.—A woman, aged 23, came to the hospital complaining of cough, dyspnea on exertion and slight edema of the ankles in the evening. The heart sounds were normal. The radiologist diagnosed the case as probable enormous dilatation of the left auricle or a mediastinal lesion. After ten days of digitalis treatment and rest, the dark mass in the roentgenogram had greatly diminished, but there was still considerable dilatation of the left auricle. A third roentgenologic examination showed mitral stenosis and enlargement of the left auricle. The results of auscultation remained negative. On palpation on certain days, a slight presystolic murmur, localized in the left fifth intercostal space, could be perceived. There may be, in this case, some relation between a probable heredosyphilis and the cardiopathy.

Humoral Reactions in Pulmonary Aspergillosis.—Pulmonary aspergillosis, unlike sporotrichosis, does not provoke the development of agglutinins. The fixation reaction is also negative. Study of the antigenic reactions in aspergillosis shows the sensitiveness of the organism to aspergillar antigens, whether it be pure pulmonary aspergillosis or aspergillosis associated with tuberculosis. One may compare the focal reaction, after the antigenic intradermal reaction in patients with aspergillosis with reactions at the tuberculous focus after tuberculin injections. These reactions caused the discontinuation of attempted therapy.

Associated Diabetes and Nephrosis.—The nephropancreatic syndrome in this case began with a nephritis, with marked edema and abundant albuminuria, without arterial hypertension or azotemia (except at the terminal period), and was complicated by diabetes, without denutrition and with acidosis only after extreme overfeeding of the patient. Thyroid treatment was successful for a time, but lost effect. The patient died after an operation for peritonitis.

Anasarca of Alimentary Origin.—A child, aged 3 years, had been given a normal diet of eggs, milk, pap, thick soups and calf's brains. After an attack of diarrhea, he was put on a farinaceous diet. Each time that a heavier diet was substituted, the disturbance was aggravated. The diet remained strictly farinaceous from the twenty-ninth to the thirty-sixth month. There was diarrhea, edema and eczema. He was given soup, vegetables, butter, cream and pap, and the diarrhea stopped, but anasarca appeared with ascites and hydrothorax. The ascitic fluid was extremely poor in protein. The edema, evidently due to a diet too exclusively starchy, remained moderate as long as there existed an abundant liquid diarrhea. When fats were given, the condition was not improved. When the diarrhea was treated and cured, anasarca appeared. Meat added to the diet brought only an exacerbation of the eczema. Treatment was successful when albumins in the form of casein and calf's liver and the most diversified vitamins were given.

Presse Médicale, Paris

35: 913-920 (July 20) 1927

*Lumbar Abscesses of Colic Origin. H. Lorin and M. Laemmer.—p. 913.
Reform of Medical Studies. A. Rollot.—p. 917.

Topography and Treatment of Lumbar Abscesses of Colic Origin.—The authors advise a lateral paraperitoneal incision with freeing of the peritoneum, or, better, a lumbar incision directed a little outward, when one knows, beforehand, that the abscess is retrocolic. If the exact location of the abscess is not known, the lumbar route is surer. After recovery from the operation, the cause of the abscess should be determined and proper treatment initiated. In the case reported, a parasite was not discovered in the feces, but as the stools were liquid and orange in color, and as the patient had lived in the colonies, he was given acetarsone per os and recovered.

Schweizerische medizinische Wochenschrift, Basel

57: 777-800 (Aug. 13) 1927

*(Sidero-) Mycotic Splenomegaly. M. Askanazy and A. Schweizer.—p. 777.
Treatment of Fracture of Clavicle. F. Pedotti.—p. 779.
Statistics of Primary Glaucoma. M. Rohner.—p. 780.
*Protracted Postinfluenzal Stomatitis with Presence of Influenza Bacillus. E. Tomarkin and W. Loewenthal.—p. 787.

(Sidero-) Mycotic Splenomegaly.—With Löffler's methylene blue and even more clearly with the Giemsa stain, streaks appeared in the enlarged spleen removed from a boy, aged 19 months. These showed filaments which were certainly mycelia. Three spleens later studied by Schweizer contained numerous fibrous areas rich in iron. In these areas, which are connected with the splenic trabeculae by the arteries, spherical bodies suggesting a parasitic structure appeared. The brown areas contained mycelia. It is probable that the parasites select the spleen because it serves as a storehouse for iron. If experimental splenomegaly could be produced through infection of the spleen with a fungus, then the whole splenic process might be attributed to the fungus invasion.

Protracted Postinfluenzal Stomatitis with Presence of Influenza Bacilli.—All therapeutic measures instituted during three months failed to relieve the patient of stomatitis. Influenza bacilli were found. The woman had suffered an attack of influenza at New Year and the stomatitis appeared in the middle of January.

Archiv f. exper. Pathologie u. Pharmakol., Leipzig

124: 1-128 (July) 1927

*Iodine Content of Goiters. C. Abelin.—p. 1.
Action of Camphorated Phenol. F. Müller et al.—p. 41.
*Effect on Intestine of Liquid Petrolatum. E. Schlagintweit.—p. 59.
Relation of Central Nervous System to Immunity. L. Bogendörfer.—p. 65.
*Diuretic Action of Alcohol. J. Mosonyi and P. Gömöri.—p. 73.
*Effect of Various Salts on Blood Vessels. M. J. Gramenitzki.—p. 83.
Effect of Carbon Dioxide in Strychnine Poisoning. M. J. Gramenitzki.—p. 90.
Effect of Thyroid Extracts on Irritability of Autonomic Nerves and on Action of Epinephrine. W. Feldberg and E. Schilf.—p. 94.
Portal System as Blood Reservoir. A. Jarisch and W. Ludwig.—p. 102.
Effect of Synthalin on Respiratory Quotient in Diabetes. A. Lublin.—p. 118.

Iodine Content of Goiters.—Abelin found iodine in normal thyroids of the new-born and in struma congenita. Ingestion of iodized salt by the mother prior to the birth of the child was without effect on its thyroid. The iodine content of the gland was high in struma diffusa, not quite so high in struma nodosa. A very small amount of iodine was found in a case of struma diffusa basedowiana with well marked clinical symptoms. Struma Langhans and the bone metastases of a thyroid adenoma contained a considerable quantity of iodine.

Action of Liquid Petrolatum.—Schlagintweit asserts that this substance is not a lubricant for the intestine; neither does it inhibit resorption. Its action is the result of a change in the consistency of fat and an increase in fluids. Liquid petrolatum cannot be classed as a cathartic. It belongs in the same group as agar agar and other substances whose bulk induces bowel evacuation.

Diuretic Action of Alcohol.—Distilled water, a 5 per cent solution of alcohol and a 0.2 per cent solution of caffeine were deposited by Mosonyi and Gömöri by means of a stomach tube in the stomach of dogs. Five hours later the urine was withdrawn by catheter. The amount of urine was increased in each case, but the excretion of electrolytes was increased only when alcohol or a combination of alcohol and caffeine was administered. A definite conclusion as to the cause of this happening was not reached.

Effect of Salts on Blood Vessels.—Gramenitzki states that sodium salts lower blood vessel tonus; calcium salts increase it; potassium salts added to Ringer's solution increase it. Ringer's solution with potassium raises the tonus, but if the calcium is removed from it the tonus is lowered. The vasoconstrictor action of potassium salts is greater than the vasodilator action of equimolar sodium salts.

Archiv für Gynäkologie, Berlin

130: 239-414 (July 19) 1927

*Gynecologic Roentgen-Ray Carcinoma. H. Dehler.—p. 239.
Influence of Growth of Carcinoma on Ovarian Function of White Mouse. A. Mahnert.—p. 275.
Radiotherapy of Carcinoma of Cervix. W. Fürst.—p. 283.
Multiple Primary Tumors in Uterus and Ovary. K. von Gusnar.—p. 325.
Primary Melanosarcoma of Vagina. A. Mulzer.—p. 342.
Xanthoma Cells in Uterus. W. Schiller.—p. 346.
Function of Interrenal System in Pregnancy. J. Granzow.—p. 376.
Morphine in Obstetrics. H. Kamniker.—p. 388.
Variation Statistics and Gynecology. J. Aebly.—p. 403.
Reply. E. Wehefritz.—p. 413.

The Gynecologic Roentgen-Ray Carcinoma.—This lesion, Dehler affirms, is nonexistent. He analyzes the seventy-nine cases in the literature in which carcinoma has developed in the genital tract after a therapeutic gynecologic irradiation, and maintains that a causal connection is not proved and is, moreover, theoretically impossible. Roentgen-ray castration appears to heighten resistance to carcinoma. With certain reservations, it is, he holds, the best remedy for combating hemorrhages of ovarian origin, but it should always be preceded by curettage to assure that a malignant process is not present. In doubtful cases, the carcinoma dose instead of the ovarian dose should be applied.

Beiträge zur klinischen Chirurgie, Berlin

139: 569-755, 1927

Lighting of Operating Rooms. E. Heller and L. Schneider.—p. 569.
Free Autoplastic Bone Transplantation. H. Koch.—p. 635.
*Acid-Base Equilibrium with Biliary Fistulas and Origin of Porotic Malacia. G. Düttmann.—p. 720.
Diverticulum in Female Urethra. A. Brandes.—p. 730.
Pathogenesis of Tendovaginitis Stenosans. E. Eichhoff.—p. 746.

Change in Acid-Base Equilibrium After Establishment of a Biliary Fistula and Its Importance in Etiology of Porotic Malacia.—The material of Düttmann's investigations consisted of five patients whose entire output of bile was conducted outside the body by a drainage tube. He found that deprivation of bile resulted in acidosis with fall in the alkali reserve. The loss of calcium in the bile was made up by mobilization of calcium in the skeleton, and the calcium content of the blood remained about normal. The loss of calcium from acidosis and the lack of vitamin D from disturbed fat digestion together bring about the condition of porotic malacia. While the acidosis remains, vitamin administration will not prevent the bone changes.

Deutsche Zeitschrift für Chirurgie, Leipzig

203 and **204:** 1-701 (May) 1927

Heart Function and Operation Trauma. E. Rehn.—p. 1.
*Stasis in Inferior Vena Cava and Pericarditis Adhaesiva. C. Rhode.—p. 18.
*Influence of Motion of Diaphragm on Circulation in Inferior Vena Cava. R. Nissen and O. Wustmann.—p. 42.
Circulatory Disturbances from Altered Intrapericardial Pressure. H. Reissinger.—p. 48.
Operative Treatment of Femoral Aneurysm. B. Köhler.—p. 56.
*Splenectomy in Treatment of Essential Thrombopenia. W. Schaack.—p. 62.
Hour-Glass Tumors of Spine and Dumb-Bell Shaped Lipomas of Thorax. H. Coenen.—p. 71.
Plexiform Angioma of Pia. G. Perthes.—p. 93.
Brain Tumors; Surgical Treatment. Berger and Guleke.—p. 104.
Operative Exposure of Tumors of Cerebellopontile Angle. R. Demel and W. Schulze.—p. 168.
Motility of Appendix. L. Aschoff and O. Pokorny.—p. 175.
*Blood and Lymph Circulations in Artificial Ileus. W. Schulze.—p. 189.
Extended Indications for Gastric Resection in Carcinoma. E. Hesse.—p. 204.
Value of Hepatic Function Tests in Surgery. H. Ruef.—p. 214.
Simultaneous Pancreatic Juice and Bile Peritonitis Without Perforation. E. Bundschuh.—p. 233.
Symptomatology of Gallbladder Adhesions. W. Cuno.—p. 257.
Treatment of Diffuse Suppurative Peritonitis. P. Seeliger.—p. 271.
Diagnostic Abdominal Puncture. P. Frangenheim.—p. 280.
Twilight Sleep in Abdominal Surgery. W. Stemmler.—p. 287.
Spontaneous Cure of Renal Tuberculosis? H. Kümmell, Sr.—p. 303.
Nephralgia with Phosphaturia. K. Fischer.—p. 314.
Restoration of Fallopian Tube. F. Unterberger.—p. 322.
Supraclavicular Gland Metastasis of Cancer: Air Embolism with Intracardiac Splashing. P. Bull.—p. 328.
Treatment of Cancer in Mucous Membrane of Cheek. T. Hünermann. p. 332.
Importance of Laryngo-Otology to Surgery. K. Amersbach.—p. 337.
Caput Obstipum Congenitum. W. Schulze.—p. 347.
Surgical Treatment of Elephantiasis. Keysser.—p. 356.
Circumscribed Fibrous Osteodystrophy. A. Gottesleben.—p. 376.
Behavior of Periosteum in Fractures of Long Bones. H. Bürkle-de la Camp.—p. 391.
Physical Changes in Bone Transplants and Diseased Bones. H. Binswanger.—p. 413.
Sedimentation Test in Bone and Joint Tuberculosis. H. Knorr.—p. 429.
Osteochondritis Deformans Juvenilis. W. Hoffmeister.—p. 449.
Successive Arthrectomy, Arthrodesis and Arthroplasty in Tuberculosis of Hip. H. Krüger.—p. 464.
"Congenital Snapping Knee." J. von Stackelberg.—p. 470.
Epiphyseal Changes in Paralytic Contractions of Knee. R. Wilhelm.—p. 480.
Etiology of Köhler's Disease of Scaphoid. H. Nieden.—p. 488.
Elastic Treatment of Club-Foot. H. Kraske.—p. 499.
Materials for Casts. H. Nieden.—p. 508.
Improvements in Splints for Lower Extremity. K. Port.—p. 516.
Indications for Roentgenotherapy. G. von Pannewitz.—p. 523.
Roentgenotherapy of Acute Suppurative Inflammations. A. Kohler.—p. 539.
Experiments in Radiotherapy of Inflammations. R. Mittermaier.—p. 557.
*Galvanic Currents in Relation to Hyperemia and Wound Healing. T. Diemer.—p. 575.
Justification of Autohemotherapy in Surgery. H. Achelis.—p. 587.
Action of Scarlet Fever Serum on Other Streptococcic Diseases. H. Killian.—p. 602.
Value of Antiseptics in Surgery. R. Demel.—p. 612.
*Changes in Leukocytes in Surgical Infections. H. von Seemen.—p. 633.
Vaccine Treatment of Inoperable Tumors. E. Nicholson.—p. 642.
Combined Malaria Treatment of Syphilis. P. Mulzer.—p. 654.
Intra-Uterine Operation on Mammalian Fetus. E. Bors.—p. 669.
Late Results of Free Fat Transplantation in Breast and Joints. L. Wrede.—p. 672.
Incidence of Tuberculosis and of Simple Chronic Synovitis of Knee. H. Burckhardt.—p. 686.

Stasis in the Inferior Vena Cava and Pericarditis Adhaesiva.—Extrapericardial stenosis of the inferior vena cava, between the pericardium and the diaphragm, was followed, in Rohde's experiments on dogs, by many of the symptoms of adhesive pericarditis. An initial fall in arterial pressure (explained by diminution of the output of the heart) was followed after a few weeks by a rise (accounted for by increased resistance of the vessels of the liver, kidneys and spleen, from degenerative processes due to congestion in these organs). The observation period was too short for the appearance of phenomena of cardiac insufficiency, with a return of low arterial pressure, but the tissue changes in engorged liver, kidney and spleen were observed from their earliest stages (for the first time, Rohde thinks) to late developments.

Influence of the Motion of the Diaphragm on the Circulation in the Inferior Vena Cava.—It was shown in the animal experiments of Nissen and Wustmann that any mechanical or functional hindrance to the movement of the diaphragm, as in obliteration of the phrenico-costal pleural angle, mediastinopericarditis, emphysema and diaphragmatic pleuritis, results regularly in a slowing down of the circulation in the inferior vena cava.

Splenectomy in Treatment of Essential Thrombopenia.—In three women with essential thrombopenia of many years' duration, Schaack saw all the symptoms disappear and the blood picture return to normal after removal of the spleen. In acute cases, the operation is contraindicated.

Blood and Lymph Circulations in Experimental Ileus.—Schulze studied the blood and lymph circulation of the small intestine in twelve cats with experimental strangulation ileus. In all the animals blood thrombi were found in the mesenteric lymph channels of the intestinal loops in which hemorrhagic infarction was present, and the preparations indicated various routes by which infectious and toxic material could pass by way of the lymph stream into the general blood circulation and, particularly, into the lungs. Gross and microscopic pictures of preparations with injected vessels are reproduced.

The Galvanic Current in Relation to Hyperemia and Wound Healing.—The application of the constant galvanic current is recommended by Diemer to further healing in the presence of local disturbances of circulation. By electrolysis and the excitation of endosmotic processes, it results in a local collection of nutrient substances suitable for complete cell metabolism. The method would appear to be of especial value in transplantations. Six cases are described in which it was used. The current should not exceed 1.5 milliamperes

per square centimeter at the anode and 0.4 milliamperes per square centimeter at the cathode, and from ten to fifteen minutes should be the maximum length of each treatment.

Pathologic Changes in Leukocytes in Surgical Infections.—Seemen describes certain changes observed in leukocytes, particularly neutrophils and monocytes, in the course of localized and general infections. The combined Giemsa stain was used. The changes affected nucleus, protoplasm and granulation. In the early stages there is increase of cells with clumped nuclei; later, a smoky discoloration of the protoplasm, and granules are more numerous and coarser; in virulent infection, particularly streptococcic general infection, vacuoles, which may contain bacteria, are numerous in the protoplasm of the neutrophils and gray-blue streaks appear. A delicate technic is required to reveal these changes, but, when manifested, they should be an aid in judging the virulence and course of the infection and the results of treatment. The changes described may be studied on colored plates.

Klinische Wochenschrift, Berlin

6: 1501-1544 (Aug. 6) 1927

Survey of Rickets Research During Past Five Years. A. Orgler.—p. 1501.
*Effect of Hypertonic Solutions on Circulation. F. Kisch.—p. 1505.
*Amino-Acid Content of Blood During Pregnancy. K. Hellmuth.—p. 1507.
*Treatment of Epidemic Encephalitis. G. Winkler.—p. 1508.
Puerperal Gas Bacillus Infections. H. Brütt and W. Lehmann.—p. 1510.
Localization of Glycogen in Liver. H. Edelmann.—p. 1513.
Influence of Temperature of Atmosphere on Immunity and Infection. E. Friedberger and S. Seidenberg.—p. 1515.
Sugar Content of Pathologic Fluids. H. Nathan.—p. 1516.
*Blood Group Researches in Familial Hemophilia. A. Kubányi.—p. 1517.
*Cardiac Rupture After Mountain Journey. P. Eichler.—p. 1519.
Does Epinephrine Act Through Mediation of Calcium? L. Jendrassik and A. Czike.—p. 1521.
Demonstration of Insulin in Human Blood After Peroral Ingestion of Dextrose. H. Häusler and R. Weeber.—p. 1521.
Case of Eunuchoidism with Signs of Acromegaly. G. Scherk.—p. 1522.
Treatment of Pneumonia in Children. J. Gehrt.—p. 1524.
Value of Gymnastic Exercises in Hospital. A. V. Knack.—p. 1526.

Effect on Circulation of Intravenous Injections of Hypertonic Solutions.—Injection into the femoral vein of a cat of 1 cc. of a 40 per cent dextrose solution per kilogram of body weight was followed, in Kisch's experiment, by prompt increase of the heart beat volume and the minute volume and by dilatation of capillaries. In so far as the results of animal experiments justify deductions as to the behavior of the human organism under pathologic conditions, he believes that this is an indication that the procedure would be of therapeutic value under threatening conditions of acute heart failure—for example, in acute pulmonary edema.

Alleged Changes in Amino-Acid Content of Blood During Pregnancy.—Hellmuth holds that the amino-acid content of the blood during pregnancy does not show any considerable deviation from normal, under either ordinary or pathologic conditions.

Treatment of Epidemic Encephalitis. — Winkler has endeavored to combat the sequelae of epidemic encephalitis by symptomatic treatment with special exercises rationally carried out. He found that the several symptoms were frequently related and formed a vicious circle, and that, if he could relieve or eliminate one symptom, other symptoms could be influenced to a great extent. The exercises must not become routine, but must be strictly adapted to each individual case. Such exercises are indicated more particularly in the cases that progress slowly—cases in which practically a "cure with defects" has been obtained. The more intelligent patients responded best to the treatment.

Blood Group Researches on Hemophilic Family.—Kubányi admits that his observations on a single hemophilic family do not justify any sweeping conclusions. In five generations of the Mampel family there were at least twenty-three genuine cases of hemophilia. The living hemophiliacs (three) all belong to group IV. The same group characterizes the married couple, S. Koch and G. Teutsch, and their children. In the whole Mampel family there was not any nonhemophiliac belonging to group IV. Only the two groups II and IV are represented in the family. The men who married Mampel descendants also belonged to groups II and IV.

Cardiac Rupture Following Journey on Mountain Railway.—The patient whose case Eichler describes was a sturdy, somewhat corpulent innkeeper, aged 58. In October he ascended by mountain railway Mt. Krenzeck, 1652 meters above sea level. During the journey he was attacked with severe cramplike pains in the heart region. (He had never previously consulted a physician.) He became dizzy, pale and cold, and as a feeling of oppression persisted in the heart region, he returned to Nuremberg by the next train. Death ensued three days later. Necropsy revealed an acute cardiac rupture with hemopericardium in the region of a myomalacia caused by thrombosis of the horizontal branch of the left coronary artery.

Medizinische Klinik, Berlin

23: 1169-1206 (Aug. 5) 1927

*Pathology and Treatment of Headache. G. Peritz.—p. 1169.
Chloroform Inhalation in Intra-Uterine Asphyxia. B. Waller.—p. 1174.
Insulin Treatment in Grave Diabetes. W. Küster.—p. 1178.
Necessity for Interruption of Pregnancy After Mistaken Irradiation of Gravid Uterus. E. Sachs.—p. 1182.
Problem of Impotence. B. Schapiro.—p. 1183.
Gastro-Intestinal Disease and Genital Insufficiency. L. Mayer-Homberg.—p. 1185.
Abortive Treatment of Urethral Gonorrhea in Men. Lippmann.—p. 1186.
Syphilis in Light of Recent Biologic and Immunotherapeutic Researches. S. Bergel.—p. 1187.
Obstetric and Gynecologic Therapy. G. Burckhard.—p. 1189.

Pathology and Therapy of Headache.—Headache, Peritz states, may be said to be due to anemia or hyperemia. There are two distinct types of headache. It may be only a symptom of an organic disease, or it may be traceable to a functional disorder. Peritz holds that functional headaches do not arise within the brain centers or in the meninges but are induced by myalgias. Even migraine has a myalgic basis. The author discusses the rôle of the nervous system in headaches and the origin of myalgias. The severity of a headache depends on the resistance in the nervous system. As the chief causes of functional headache, overwork and fatigue are mentioned. Other causes are: anemia, gout, endocrine disturbances, obesity, infections (influenza), intoxications (alcoholic beverages), reflex pains (disturbances of vision). The treatment varies with the cause, but general measures will be needed in most cases. Massage, high frequency current, application of heat, use of certain drugs, and, finally, injection of sodium chloride solutions into the myalgic regions may be helpful. Applications of heat are contraindicated in persons with high blood pressure. Partial arm baths (Schwenninger) are often helpful. In cases in which headache is due to prolonged overwork, infections or mild constitutional disturbances, injections of sodium chloride solution produce lasting results. In anemic persons, rest, fresh air and arsenic preparations are indicated. When in nervous persons excitability is great, patients must be calmed and strengthened before any special treatment for headache is applied. In many cases it will suffice to eliminate the hyperexcitability of the nervous system. Psychotherapy is often helpful. In some cases a change of employment or of climate will accomplish the best results.

Münchener med. Wochenschrift, Munich

74: 1305-1352 (Aug. 5) 1927

Physician and Scientific Medicine. H. Kerschensteiner.—p. 1305.
Certain Fundamental Notions of Laws of Heredity in Man. H. Simmel.—p. 1309.
Channels in First Portion of Aorta, Their Effect, and a New Model for Their Demonstration. M. Hochrein.—p. 1312.
Lithotripsy Under Control of Eye. E. Joseph.—p. 1314.
Bayer 205 in Blood Transfusions. S. Bryuchonenko and O. Steppuhn.—p. 1316.
*Etiology of Adnexitis. E. Gross.—p. 1321.
*Cerebellar Hypotonia in Child. L. Huismans.—p. 1323.
*Late Abscess After Mastitis Typhosa. W. Gerlach.—p. 1324.
Congenital Cystic Enlargement of Submaxillary Gland. P. Kissinger.—p. 1325.
Antagonism Between Causative Agent and Organism Attacked. W. Stoeltzner.—p. 1325. C'cn.

Etiology of Adnexitis.—Gross, in analyzing the records of the University Women's Hospital (Leipzig), for 1925, found that of the 200 febrile abortions, 21 per cent led to adnexitis,

and of these only 7 per cent resulted from ascending gonorrhea, whereas 93 per cent were produced by wound infection. Of the admissions for primary adnexities, the etiology was not ascertainable in 50 per cent of the remaining cases. Nine per cent were associated with infected myomas, 3 per cent with cancer of the uterus, 3 per cent with tuberculosis, 11.5 per cent with gonorrhea (diagnosed as certain), 11.5 per cent with suspected gonorrhea, 4 per cent with appendicitis, and 58 per cent with puerperal infection not of gonorrheal origin. Thus, 74 per cent of the cases in which the origin was ascertainable were associated with wound infection.

Cerebellar Hypotonia in Child Following Fall of Mother During Pregnancy.—In the fifth month of pregnancy, the mother had fallen downstairs, alighting on buttocks and back. The resulting pain was severe, and some liquor amnii is said to have been discharged. The child was born without difficulty at term, but soon developed a deformity of the thorax and was unable to walk or even to stand. Spondylitis was diagnosed and the child was placed for two and one half years in a plaster cast. A bilateral Bassini operation was performed for congenital inguinal hernia (right) and a potential hernia (left). When the child was removed from the cast, the curvature of the spine and the deformity of the thorax had improved somewhat, but the musculature had atrophied. The internal organs were sound and the mental development was precocious. The child died from an intercurrent pneumonia. Necropsy was not permitted. Huismans thinks that hemorrhages of the tentorium and the cerebellum were produced in the fetus by the fall of the mother.

Late Abscesses After Mastitis Typhosa.—A married woman, aged *37*, had a painful swelling of the right breast, plainly a mastitis. Eight years previously she had had typhoid, and during convalescence a painful lump appeared in the right breast, which responded to treatment with cold compresses. On dismissal, the lump in the breast had shrunk to the size of a walnut, which condition persisted unchanged until eight months ago. Then, under iodine inunction, the lump became very large. Incision of the abscess evacuated a large quantity of thin, greenish pus, which contained a pure culture of typhoid bacilli. As the fistula did not heal spontaneously, the canal was excised in toto, which effected complete cure.

Virchows Archiv für path. Anat. und Physiol., Berlin

265: 1-238 (July 6) 1927

*Etiology of Scarlet Fever. A. Smirnowa-Zamkowa.—p. 1.
Periarteritis Nodosa. P. Kimmelstiel.—p. 16.
Histology of Endophlebitis Hepatica Obliterans. S. Gáspár.—p. 31.
Liver Studies: Origin of Necrosis and Connective Tissue Hyperplasia. I: Results of Ligation of Common Bile Duct. L. Loeffler.—p. 41.
Duplication of Gallbladder. A. Priesel.—p. 76.
*Etiology and Anatomy of Chondrodystrophia Fetalis. A. Kahlstorf.—p. 84.
Traction-Pulsion Diverticulum of Esophagus. L. Breitenecker.—p. 90.
*Rare Tumors of Mamma. W. Thür.—p. 96.
Malignant Degeneration of Calcified Epithelioma of Skin. N. Gromiko.—p. 103.
Disturbances of Lipoid Metabolism in Suprarenal Cortex. M. Mandelstamm.—p. 117.
Fatty Tissue and Lipoids in Parathyroids, Thyroid and Suprarenals. H. P. Grossmann.—p. 137.
Changes in Duodenal Mucosa in Ulcer. H. Puhl.—p. 160.
Aleukemic Lymphadenosis with Implication of Throat and Nose. W. Anthon.—p. 199.
Negri-Negative Rabies. F. Schweinburg.—p. 210.
*Alterations in Hematopoietic Organs Induced by Bacteria and Toxins. O. Bykowa.—p. 226.

Etiology of Scarlet Fever. — Smirnowa-Zamkowa repeatedly isolated an organism from the gallbladder of persons who died from scarlet fever and once from the blood of a living patient. Animal experiments always were positive. The cat is preferred inasmuch as the organism grew best in its blood, thus suggesting that the cat may be the natural host of this organism. While a classification cannot yet be made, primarily this organism is a protozoon.

Etiology of Chrondrodystrophia Fetalis.—Disturbances of internal secretion, especially a hypofunctioning of the thymus, are regarded by Kahlstorf as being the etiologic factor in this disease. Mechanical causes are believed to be responsible for the bone deformities.

Tumor of Mamma. — Thür describes the occurrence of a rare form of tumor in the breast of a woman, aged 61. It was a combination of cyst and spindle cell sarcoma, both tumors developing separately, but the sarcoma encroaching on the cyst.

Effect of Bacteria and Toxins on Hematopoietic Organs.—Bykowa found that the injection of scarlet fever blood or toxin or of an emulsion of diphtheria bacilli invariably induced a strong reaction on the part of the reticuloendothelial apparatus. The injection of a single large dose caused necrosis; injection of small doses, often repeated, caused reproductive changes in the spleen, lymph nodes, liver and suprarenals, as well as a most marked development of the myeloid tissue in bone marrow. The size of the dose and the duration of its effect alone determine the character of the reaction; the kind of poison has nothing to do with it.

Wiener klin. Wochenschrift, Vienna

40: 1017-1044 (Aug. 11) 1927

Pathology and Therapy of Puerperium. H. Heidler.—p. 1017.
So-Called Giant-Cell Sarcomas of the Jaws. K. Häupl.—p. 1020.
Spontaneous Pneumothorax. A. Weisz and E. Koppenstein.—p. 1023.
*Diet in Surgical Tuberculosis. P. Lačný.—p. 1025.
Extended Parasacral Anesthesia in Operations on the Small Pelvis. H. Finsterer.—p. 1027.
*Roentgen-Ray Treatment in Stubborn Epistaxis. L. Popp.—p. 1029.
Apparatus for Producing Undulating Currents and Their Therapeutic Application. E. Zellner.—p. 1030.
Gynecology in Relation to Growth and Character of Population. R. Stiglbauer.—p. 1032.
Dangers of Treatment with High Frequency Currents by Laymen. J. Kowarschik.—p. 1034.
Treatment of Eczema of Nipple and of Anogenital Region. A. Brandweiner.—p. 1035.
Microscopy as Applied to Capillaries. P. Liebesny.—p. 1035.

Diet in Surgical Tuberculosis.—In surgical tuberculosis Lačný recommends reducing the fluid intake to the minimum that the patients can stand, and in order that there may not be too much suffering from thirst he prescribes, in the main, a saft-free diet. Restrictions are not placed on the ingestion of such minerals as occur in the various foods. Canned foods are prohibited, also highly seasoned foods and milk. Most patients gain in weight on this diet, whereas other patients on a salt-free diet usually lose weight. A second good effect of the diet was seen in the speeding up of healing.

Roentgen Rays in Stubborn Epistaxis.—Popp reports that in cases of stubborn epistaxis, characterized by copious hemorrhages, threatening the life of the patient and resistant to the usual methods, he saw good results from stimulation of the spleen with roentgen rays. The hemostatic effect is prompt and lasting.

Zeitschrift für Geburtshülfe und Gynäk., Stuttgart

91: 235-482 (July 1) 1927

Intracranial Lesion or Asphyxia of the New-Born. H. Heidler.—p. 235.
*Influence of Weather in Eclampsia. Von Heuss.—p. 323.
Artificial Menopause. B. Steinhardt.—p. 361.
Giant Fetus in Prolonged Pregnancy. H. Kritzler-Kosch.—p. 385.
*Lipoid Detention After Abortion. P. Neuda.—p. 395.

Influence of Weather on Eclampsia.—In studying the incidence of eclampsia in relation to weather, Heuss found that it was highest during "cold waves," especially if the cold was accompanied by damp. He connects this fact with the sensitiveness of the vasomotor system to the influence of cold. Both eclampsia and high blood pressure are more prevalent in large cities than in the country.

Lipoid Retention After Abortion.—Neuda observed increase of fat in the soft palate (at the margin of the hard palate) in women with a history of abortions and premature births. In a series of women in whom artificial abortion was performed because of tuberculosis, the physiologic pregnancy lipemia was found to be maintained for several weeks after the termination of the pregnancy; in the majority there was a further rise in the cholesterol content of the blood, continuing into the fourth week. The palatal change is a sequel or final phase of a morbid process based on dis-

turbance of lipoid metabolism, and this same process Neuda regards as the cause of the general disturbances (nervous disorders in young women, hypertension in older women) that are frequently experienced after abortion.

Zentralbl. f. Chirurgie, Leipzig

54: 1921-1984 (July 30) 1927

Cholate Poisoning in Bile Peritonitis. E. Melchior and L. Wislicki.—p. 1922.
Fibroma of Stomach. E. Spamer.—p. 1925.
Surgery of Tumors of Spinal Cord. A. W. Wischnewsky.—p. 1927.
Technic of Sacral Resection of Rectal Carcinoma. K. Vogel.—p. 1933.
Blood Calcium in Latent Postoperative Tetany. K. Löwenstein.—p. 1935.
Guarding Against Myxedema and Tetany in Goiter Operations. K. Urban.—p. 1937.
Plastic Operations on Bile Ducts. C. Goebel.—p. 1940.
*Arterial Blood Supply of Liver. E. S. Rabinovitsch.—p. 1943.
Fracture of Mesial Condyle of Femur Cured by Operation. M. Glauberman.—p. 1947.
Posttonsillitic Sepsis. R. Bertelsmann.—p. 1949.

Arterial Blood Supply of Liver.—From studies on sixty-six cadavers, Rabinovitsch states that the arteria hepatica propria anastomoses regularly in the transverse fissure with the accessory artery branching off from the arteria gastrica sinistra or from the arteria mesenterica superior, if such an accessory artery exists. In almost half of all cases either the arteria gastrica sinistra or the arteria mesenterica superior is so extensively developed that an accessory artery is possible. Since the topography of the accessory arteries is constant, their presence or absence may easily be determined and the question decided whether or not it is possible to ligate the arteria hepatica propria, its branch or one of the accessory arteries.

Zentralbl. f. Gynäkologie, Leipzig

51: 1881-1944 (July 23) 1927

*Palpation of Ureter in Women. G. Frommolt.—p. 1882.
Surgical Treatment of Ectopia of Bladder. A. Mayer.—p. 1887.
Changes in Bladder After Irradiation of Carcinoma of Uterus. F. Heimann.—p. 1899.
*Spontaneous Birth After Goebell-Stoeckel's Operation for Incontinence. A. Mandelstamm.—p. 1905.
Operation for Vesicovaginal Fistula. H. Köhler.—p. 1907.
Operation for Vesicovaginal Fistula Without Speculums. D. Kulenkampff.—p. 1909.
Carcinoma of Congenital Pelvic Kidney. H. H. Schmid.—p. 1911.
Differential Diagnosis of Abdominal Tumors. O. Brakemann.—p. 1916.
Injury to Urethra Sub Coitu. E. Hausmann.—p. 1923.

Palpation of Ureter in Women.—In 80 per cent of women, Frommolt is able to palpate the healthy ureter. One or two fingers are introduced into the vagina between the bladder and anterior wall of the cervix. They are moved upward and a little to the side and press in between the floor of the bladder and the interureteral ligament, on one side, and the ureter on the other. The fingers are now brought as near as possible to the abdominal wall and the fingers of the other hand, placed just above the symphysis and Poupart's ligament, are moved to meet them. With practice, the ureter can be palpated between the fingers of the two hands in a large number of cases.

Spontaneous Birth After Musculoplasty for Urinary Incontinence.—In the case reported by Mandelstamm, spontaneous delivery did not permanently disturb the urinary continence that had been obtained by the Goebell-Stoeckel plastic operation on the pyramidalis.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

71: 377-504 (July 23) 1927

*Synthalin and Phlorhizin Diabetes. I. Snapper and F. Östreicher.—p. 378.
Localization of Spirochaeta Pallida in Brain in Progressive Paralysis. E. A. D. E. Carp.—p. 386.
Results of Cervical Cesarean Section. R. Finaly.—p. 393.
Loosening of Descemet's Membrane After Lens Extraction. H. Weve.—p. 398.

Synthalin and Phlorhizin Diabetes. — Snapper and Östreicher produced phlorhizin diabetes, with severe acidosis, in dogs and then administered relatively large doses of synthalin. On the day after the first dose of synthalin, the animals, which had been comatose, were as lively as ever and free from acidosis.

Acta Dermato-Venereologica, Stockholm

8: 59-116 (June) 1927

Case of Pityriasis Rubra with Unusual Course. W. Pospeloff and D. Krupnikoff.—p. 59.
*Protein Therapy in Skin Diseases. O. Michaëlis.—p. 72.
*Leukoderma and Melanoderma in Skin Diseases. J. Almkvist.—p. 91.

Protein Therapy in Skin Diseases.—Michaëlis asserts that protein therapy is particularly effective in inflammatory affections of the skin, such as erysipelas, dermitis, and inflammatory dermatoses superficial in kind or of vesicular, erythematous or erythematosquamous nature, eczemas, herpes, etc.

Leukoderma and Melanoderma in Various Cutaneous Diseases.—Almkvist's investigations show that certain pathologic causes may lead to leukoderma at sites where cutaneous changes have occurred, because of the destructive action of their toxins on the pigmentary process. Certain cutaneous infiltrations, due to purely infiltrating cells, at the period of regression lead to a melanoderma, resulting from the destruction of these cells. Such processes are not specific and may occur in various affections.

Acta Radiologica, Stockholm

8: 189-269 (July 30) 1927

*Diathermy Treatment of Roentgen-Ray Ulcerations. H. Bordier.—p. 189.
*Radiography and Differential Diagnosis in Chalicosis. P. F. Møller.—p. 193. In English.
Histology of Normal Ovary and Irradiated Guinea-Pig Ovary. G. Fritschi.—p. 209.
*Treatment of Cancer of Breast. D. Schoute and C. Orbaan.—p. 239. In English.
*Case of Ivory Vertebra in Lymphogranulomatosis. O. Hultén.—p. 245.
Annular Shadows in Lungs from Subpleural Emphysema. S. Arnell.—p. 252. In English.
Acranion and Hydramnion Diagnosed Before Birth. S. Arnell.—p. 257. In English.
*Hodgkin's Disease with Bone Destruction. S. Arnell.—p. 259. In English.
Combined Urology and Bucky Table. E. Lysholm.—p. 263. In English.

Efficacy of Diathermy in Treatment of Roentgen-Ray Ulcerations.—Bordier reports a case of roentgen-ray treatment of uterine fibroma resulting after a few months in roentgen-ray ulcerations accompanied by severe local pains and impaired general condition. Treatment with diathermy was then given over each iliac fossa with electrodes measuring 10 by 12 cm, using 1,000 milliamperes, for twenty minutes daily for six weeks, together with emanations from a vacuum electrode and carbolic oil dressings; complete healing followed in four months.

Radiography and Differential Diagnosis in Chalicosis.—Møller describes the changes in chalicotic lungs (procelain workers' lungs). After a certain stage of development these changes, he says, are such that a flawless radiogram always makes correct diagnosis possible. By comparing radiograms of chalicotic lungs with pictures of certain tuberculous and other pathologic lung conditions, especially lymphogenous carcinomatosis and pulmonary syphilis, he shows the difficulty of differential diagnosis. The characteristic changes in these various conditions are explained and the importance of the clinical results and history emphasized. Twenty illustrations are included.

Treatment of Cancer of Breast with and Without Subsequent Roentgen-Ray Irradiation.—Schoute and Orbaan's investigations in 112 cases of carcinoma mammae treated operatively showed improved results since the introduction in 1920 of roentgen-ray treatment as soon as possible after amputation.

Case of Ivory Vertebra in Lymphogranulomatosis.—Hultén describes a case of lymphogranuloma with extensive skeletal changes, including complete sclerosis of the second lumbar vertebra. More frequent examination of the skeleton in lymphogranulomatosis is advised.

Two Cases of Hodgkin's Disease with Bone Destruction.—In Arnell's first case of pseudoleukemia there were lesions in the ribs and vertebral bodies; in the second, in the sternum, with reactive periosteal bone deposits. The roentgenogram was identical with that of a malignant growth with bone destruction. He believes Hodgkin's disease is localized in

the bones more often than the literature indicates and points to the possibility of this disease in cases resembling bone tumor.

Acta Tuberculosea Scandinavica, Copenhagen

2: 281-370, 1927

*Children Threatened with Tuberculosis. S. Tillisch.—p. 284. In English.
"Sanocrysin" Problems. K. Secher.—pp. 312 and 331. In English.
Idem. K. Secher and A. Thisted.—p. 325. In English.
*Experience with "Sanocrysin" Treatment. A. Gullbring.—p. 342.
Behavior of Gold During "Sanocrysin" Treatment. H. Hansborg.—p. 348.
Nodular Erythema and Tuberculous Lymphomas of Neck. A. Wallgren. —p. 353.
Sodium Hyposulphite Administered Intravenously in "Sanocrysin" Dermatitis. O. Jersild.—p. 361.

Children Threatened with Tuberculosis.—Tillisch discusses the value of the stability reaction, leukocytic blood picture, and roentgenogram in determining the pathologic conditions in children threatened with tuberculosis. She reports on fifty-seven cases (forty-one girls and sixteen boys, aged from 8 to 14), treated at the Oslo health association's open-air school. In fifty-five cases the reaction to tuberculin was positive. In thirty-one of these cases the source of infection was still in existence on admission; in six it was not detected. Tables present the stability reaction and blood pictures obtained in a series of examinations. She states that a manifest shifting to the left with a pathologic stability reaction indicates active tuberculosis, other pathologic conditions being excluded. Sanatorium treatment, she says, is usually unnecessary; open-air schools are of great service. Before discharge the children in this school must be well and strong in every respect, with satisfactory height and weight curve. A good, or at least improved, blood picture may in time also be required.

Two Years' Experience with "Sanocrysin" Treatment.—Gullbring's treatment with "sanocrysin" of forty-six cases of pulmonary tuberculosis since December 1924 gave negative results.

Bibliotek for Læger, Copenhagen

119: 579-626 (July) 1927

*Nosebleed. R. Lund.—p. 579.
Infections by Way of Urethra in Children. A. Johannessen.—p. 595.
Nephelometric Measurement of Neutral Fat-Cholesterol Fractions in Blood. H. Heckscher.—p. 611. C'td.

Nosebleed.—Lund says nosebleed frequently presents the first symptom of a more or less grave disturbance, such as disease of the blood or chronic lesion of the kidneys, as well as malignant tumor in the nasal passages. He discusses immediate local and general treatment.

Hospitalstidende, Copenhagen

70: 677-694 (July 21) 1927

Technic and Results of Pyelography. J. Nordentoft.—p. 677.

70: 695-718 (July 28) 1927

*Diagnosis of Otogenic Cerebral Abscess. R. Lund.—p. 695. C'td.

Diagnosis and Differential Diagnosis in Otogenic Cerebral Abscess.—In Lund's fifty-four cases of otogenic cerebral abscess, recovery occurred in ten. In fully one third of the cases diagnosis was not made and in only one half was the abscess found. However, of the seventeen cases during the last five years only one remained undiagnosed and in only two others was the abscess undiscovered. He states that the greatest difficulty in the diagnosis of otogenic brain abscesses is that the abscess on the one hand has no pathogenic symptom complex which allows differential diagnosis from other otogenic intracranial complications, and on the other hand it usually appears in connection with other cerebral complications, which not only aggravates but obscures the picture. He discusses the general symptoms, general cerebral symptoms, local cerebral symptoms, and distant symptoms as a means to diagnosis in time for effective operative treatment. The diagnostic problem consists in the interpretation of the relative strength of the symptoms and especially of the time of their occurrence with respect to each other and to the pathologic findings in the temporal bone and the cerebrospinal fluid. He explains in detail this interpretation in the differential diagnosis between otogenic cerebral abscess and the other otogenic cerebral complications and nonotogenic lesions that may cause diagnostic errors. Exploratory cerebral puncture through the unopened dura is, he says, the last but most important weapon in the struggle for diagnosis.

70: 743-764 (Aug. 11) 1927

*Diagnosis of Otogenic Cerebral Abscess. R. Lund.—p. 743. C'cn.
*Unlimited Culture of Carcinoma Cells in Vitro. A. Fischer.—p. 755.

Unlimited Culture of Carcinoma Cells in Vitro.—Cultures of the epithelial cells of Ehrlich's mouse carcinoma can be maintained apparently indefinitely on a medium consisting of equal parts of rat plasma, 75 per cent, with chicken plasma, 25 per cent, and extract of chicken embryo. The carcinoma cells rapidly grow into bits of mouse muscle or of mouse embryo added to the culture medium. Inoculation of mice with cultures of carcinoma cells are uniformly successful. This is the first time, so Fischer says, that continuous cultivation of carcinoma cells with preservation of malignant powers has been secured.

Hygiea, Stockholm

89: 577-624 (Aug. 15) 1927

*Cholesteatoma in Antrum of Highmore. G. Bremer.—p. 577.
Vascular and Nervous Symptoms in Syphilis. J. Strandberg.—p. 599.

Cholesteatoma in Antrum of Highmore.—To the nine cases of cholesteatoma in the maxillary antrum which he has found in the literature, Bremer adds a tenth. It occurred in a woman aged 41, with follicular dental cyst, ossifying periostitis with an osteophyte in the mucous membrane and a new growth containing cholesterol. Clinically this case differs from the others by absence of symptoms of chronic inflammation in the mucous membrane of the nose and nasal fossae, and pathogenically by its development from the flat epithelium of a follicular cyst.

Ugeskrift f. Læger, Copenhagen

89: 709-736 (Aug. 11) 1927

*Dystrophy of Skin and Muscles of Nervous Origin. T. B. Wernøe.—p. 709.
*Test with 70 Gm. of Glucose. S. Gørtz.—p. 713.
Diphtheria After Use of Diphtheria Anatoxin. C. C. C. Vogel.—p. 715.
Miraculous Cure. Dalmark.—p. 717.
Obliterative Treatment of Varices. S. Lomholt.—p. 718.

Dystrophy of Skin and Muscles of Nervous Origin.—The patient in Wernøe's first case presented signs of muscular dystrophy of spinal reflex origin. In the second and third cases there was dystrophy of muscles and skin, in one apparently due to primary genital dysfunction with secondary changes in the sympathetic nervous system, in the other, to primary endocrine pluriglandular dysfunction. He regards the dystrophy of the skin in his fourth case as the result of testicular dysfunction and consequent disturbances in the sympathetic nervous system.

Test with 70 Gm. of Glucose.—The function test with 70 Gm. of glucose, as used by life insurance companies in cases with glycosuria, was made by Gørtz on fourteen normal persons. The uppermost limit of the rise of blood sugar was 210 mg. per cent and he found that the return to normal fasting value should be accomplished in two and a half hours. He considers the test adapted to its purpose.

89: 757-784 (Aug. 25) 1927

Artificially Produced Malignant Tumors. A. Fischer.—p. 757.
Sulphur Treatment of Dementia Paralytica, etc. K. Schroeder.—p. 759.
"Sanocrysin." K. Faber.—p. 765.
*Experimental Investigations on Function of Tonsils. V. Schmidt.—p. 769. C'cn.

Experimental Investigation on Function of Tonsils.—The results of Schmidt's investigations indicate that the supposed active material in the tonsils is produced in the lymphatic germ centers in the young, is specific in them, has a small molecule, and is thermostabile in acid liquids, but broken up in alkaline liquids. The cessation of the effect—leukopenia—obtained by the injection of tonsillar extract soon after the extract is made alkaline suggests that the material may be similar to a hormone.